

A HISTORY  
OF  
THE OHIO STATE UNIVERSITY RESEARCH FOUNDATION

1936 - 1969

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## PREFACE

The Ohio State University Research Foundation was established in 1936 through the joint efforts of The Ohio State University and The Ohio State University Association as a vehicle to promote the development, implementation, and coordination of sponsored research at the University in the furtherance of its educational objectives. The Research Foundation, which is separately incorporated, through contractual agreement with the Board of Trustees of the University provides administrative services for the benefit of the University and its faculty in seeking support for and managing sponsored research and related programs. The Foundation is managed by directors and officers representing the administration, faculty, and alumni of the University.

In the Centennial Year of the University, 1969-70, The Ohio State University Research Foundation administered more than 700 sponsored programs with sponsor support in excess of \$16-million.

The history of the Research Foundation which follows is organized in six epochs: The Foundation in Planning, The Formative Years, The World War II Years, The Post-War Epoch, The Post-Sputnik Surge, and A Period of Growth and Change.

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## THE FOUNDATION IN PLANNING

The discussions leading to the establishment of The Ohio State University Research Foundation go back to a conference held at the Union Club in Cleveland, Ohio, April 25, 1929, when representatives of the University met with the newly organized Alumni Endowment Committee of The Ohio State University Association. This alumni committee had been formed at the suggestion of members of the Board of Trustees of the University. University President Emeritus William Oxley Thompson outlined a proposed program of research endowment and suggested the formation of an Alumni Research Council through which an alumni fund for research might be raised and administered.

Minutes of that meeting cited the advantages of the proposed plan envisioned by Dr. Thompson as follows:

1. *It would be unique because*
  - a. *It would give unusual freedom to those engaging in the research.*
  - b. *It would provide a continuity of administration for various types of research inasmuch as the Council might elect its successors and provide continuous autonomy for new enterprise.*
  - c. *The University's laboratories could be used so that for the most part salaries would be the chief expense of the fund.*
2. *It would afford an ideal relationship between teaching and the scientific spirit.*
3. *It would have an advantage over the present method of college research in that funds would be available to seek out the biggest men in the respective fields to conduct the investigations, rather than younger, less able men.*
4. *It would afford opportunity for the alumni to tie themselves closely to the educational program of the University at its highest.*

The concept as outlined by Dr. Thompson was well received by those participating in the meeting. In the ensuing discussion it was pointed out that this mechanism would make it possible to receive and administer research funds contributed by industry.

Attending the Union Club conference were: Dr. W. O. Thompson, Dr. George W. Rightmire, Mr. Julius F. Stone, Mr. Lawrence E. Laybourne, Mr. James F. Lincoln, Dr. Francis Carter Wood, Mr. Charles P. Cooper, Mr. J. L. Morrill, and Mr. John B. Fullen.

During the 1929-30 academic year, stimulated by the prospects of research support through the proposed Alumni Research Council, departments were requested by Dr. William McPherson, Dean of the Graduate School, to develop plans for research programs to be undertaken should research funds become available. Results of the Five-Year Research Program were presented by Dean McPherson to the Alumni Research Committee consisting of Francis Carter Wood, Charles F. Kettering, Charles P. Cooper, James F. Lincoln, L. W. Chubb, H. S. Warwick, William McPherson, Julius F. Stone, Lawrence Laybourne, and George W. Rightmire, at a luncheon meeting in the Faculty Club on June 6, 1930, called by President Rightmire. Subsequent to this meeting there was discussion as to the desirability of setting up an alumni research council corporation to receive, hold, and administer research funds.

Dr. Francis Carter Wood, '91, chairman of the Alumni Research Committee, made a report to the Board of Directors of the Association at its meeting on June 5, 1931, which embodied the following recommendations:

1. *That the Ohio State University should do research supported by other agencies than the General Assembly of Ohio.*

2. That it is not doing as much research as it could do because of lack of funds therefor.
3. That the alumni of the University have a very splendid opportunity to collect, conserve and expend funds for research along the following lines. These represent a composite of the points in Dr. Wood's memorandum as approved, modified and supplemented by the Board.
  - a. That some organization such as an "Alumni Research Council" might be composed of a committee of "research-minded" men, graduates and former students of the University.
  - b. That this committee be incorporated under the laws of the State of Ohio as a corporation not for profit to collect and expend money for research with authority to transfer its powers as it deemed advisable.
  - c. That the committee be composed of nine members, all affiliated with the Ohio State University Association, with research-minded members predominating, but with banker, lawyer representation if possible.
  - d. That the organization make its own by-laws and be self perpetuating, filling its own vacancies.
  - e. That the members reside in Ohio and that an advisory committee of those not in Ohio might be formed.
  - f. That a supplementary committee, to be known as the Ways and Means committee, be established to do the work of raising the funds.
  - g. That a faculty advisory committee be established to consult with the Council.
  - h. That the original personnel be selected by the Board of Directors.
  - i. That pending improved business conditions, the council go about its task slowly with a view possibly to encouraging the donation of small sums to complete certain research projects now under way at the University and for which money may be needed.
  - j. That an alumni committee properly organized ought to be able successfully to carry on the campaign for funds without the aid of independent fund-raising agencies, but that both possibilities be given consideration.

- k. *That the council be strictly alumni with no trustee and no administrative officers, but with faculty advisory help only.*
- l. *That the council be answerable only to the Board of Directors of the Ohio State University Association.*
- m. *That personnel be selected that will give the movement stamina, moving slowly over a long period of years, and that especial care be taken to lay a strong fundamental ground work with a view to making appointment to the council ultimately one of the highest honors bestowable upon alumni.*

At a special meeting of the Association Board, called July 29, 1931 specifically to discuss the Alumni Research Council, the decision was reached to proceed with incorporation predicated on (1) a responsive and cooperative attitude on the part of the University itself and (2) the enlisting of the interest of additional alumni.

To stimulate alumni interest in the Alumni Research Council the Association staged a meeting on November 21, 1931 presided over by D. J. Brumley, President, at which James F. Lincoln reviewed the historical development of the concept and proposed an organizational plan for the Alumni Research Council Corporation. Dean McPherson arranged a program of presentations on research by faculty members including W. L. Evans, Chemistry; Alpheus Smith, Physics; Ervin Dreesse, Electrical Engineering; John F. Lyman, Agricultural Chemistry; and Ralph Dewey, Economics.

A review of correspondence relating to these early discussions concerning the formation of the Alumni Research Council reveals the persistent, dedicated efforts of James F. Lincoln, President, Lincoln Electric Company, to create a mechanism to stimulate and provide support for faculty research on an organized basis. Mr. Lincoln had the able and

effective support of J. B. Fullen, Secretary, The Ohio State University Association, and J. L. Morrill, then Junior Dean in the College of Education.

Although there was general agreement as to the fundamental objectives, namely, to aid the University in establishing more formally organized and supported research programs, the manner in which it would be done was the subject of protracted discussions. The proponents were frustrated over the unseemly delays, thus causing C. F. Kettering to write Jack Fullen on one occasion "It seems to me that the first thing that is wrong with this Research Council is its utter impatience. I cannot conceive of a manufacturing concern or anyone else getting a research program going in less than four or five years time. Almost all research fails on account of impatience."

Subsequent to the alumni conference on University research, in November, 1931 J. F. Lincoln continued to devote considerable thought and effort to the matter. An astute industry executive, Mr. Lincoln was concerned about funding of research on a realistic, continuing basis and with the problems of effective use and management of such research funds. It was during this period that the emphasis shifted from support by alumni contributions to support by industry. Continuing discussions went on among Mr. Lincoln, President Rightmire, and J. L. Morrill who in this interval was appointed Vice President.

A milestone event in the establishment of the OSU Research Foundation came on October 28, 1933 when J. F. Lincoln placed a specific proposal before the Board of Trustees of the University aimed at increasing the involvement of the University in research supported by industry.



Unfortunately this report was not made a part of the meeting records so that the details appear to be lost. However, it is apparent that Mr. Lincoln stressed research for industry. He proposed that there be a director of industrial research who would report to the President of the University and would be charged with developing industry support for faculty research. Mr. Lincoln was so convinced of the importance of the proposed administrative post that he volunteered to underwrite the salary of the director for as much as two years. He was quite adamant on several points. He was insistent that the director should be in absolute charge of developing industrial research relations and that the Alumni Research Council should not interfere with his efforts.

The Lincoln proposal was referred to the President and Vice President for further study and their recommendations were presented in a 17-page report to the Board of Trustees on February 5, 1934. Their report concurred generally with the objectives of the Lincoln proposal and set forth the rationale for University involvement in sponsored research within the framework of the objectives of teaching, research, and service as a Land Grant institution.

President Rightmire made the positive recommendation that the University vigorously embark without delay upon a larger program of industrial research to be made possible through: (a) appointment of a new 'Field Director of Industrial Research' on the staff of the Engineering Experiment Station, this official to be financed during the first year, at least, by Mr. Lincoln, and (b) adoption of a new form of industrial research contract with cooperators who provided funds for Station research --

which contract, it was believed, would in many cases obviate hitherto insoluble difficulties in the matter of patentable discoveries resulting from such research.

It is obvious that the Lincoln proposal and the subsequent review and report by the President and Vice President stimulated the Board of Trustees to further action. On May 14, 1934, the Board of Trustees moved to appoint a committee to visit Purdue University to study the Purdue Research Foundation. The committee consisted of Julius F. Stone, Newton D. Baker, and Lawrence E. Laybourne.

Mr. Julius F. Stone, representing the Committee, and Mr. H. S. Atkinson, then chairman of the Board, visited Purdue University on June 15, 1934, spending the entire day in conference with President Edward C. Elliott of Purdue University; Mr. David E. Ross, President of the Board of Trustees; Mr. C. Stanely Meikle, Research Director of the Purdue Research Foundation; and Mr. R. B. Stewart, Business Manager of the University and Treasurer of the Foundation. They were accompanied on this visit by J. L. Morrill, Vice President; Carl E. Steeb, Secretary of the Board; and Dean E. A. Hitchcock of the College of Engineering.

In reporting on the meeting to the Board of Trustees, Vice President Morrill described at some length the organization and functions of the Purdue Research Foundation and the benefits accruing to Purdue University through the Foundation. He enumerated the objectives of the Purdue Research Foundation as:

1. *Service to society, especially through industry, in the solution of pure and applied scientific research problems.*
2. *The discovery, encouragement, training, and placement of a gifted minority of graduate and undergraduate students specially capable in industrial research.*

3. *Vital encouragement to members of the University faculty and staff to create new and useful fundamental knowledge through research.*
4. *The development of unity and directed coordination versus duplication and waste in the research program of the University.*
5. *The creation of an intelligent and enthusiastic understanding and support of the University and its capacities for service among leaders and laymen in the business and industry of the State of Indiana and elsewhere.*
6. *Equitable recompense to members of the University faculty and staff who have creative ability in productive research.*
7. *The solution of patent problems growing out of financially profitable industrial research, consistent with University integrity and ideals, yet independent of statutes limiting the powers of the University itself in this area.*

He went on to say:

*All these are purposes to which the Ohio State University has likewise given study and effort through the years, with special attention in recent months at the instance of Mr. J. F. Lincoln of Cleveland who has generously offered assistance to the University for the expansion and development of its program of industrial and engineering research. University officers have likewise enjoyed the benefit of recent counsel upon these subjects from Mr. Charles F. Kettering of the General Motors Research Corporation and his associate, Doctor F. O. Clements. The interest of the alumni generally in this field, attested by the projected creation of an Alumni Research Council suggested originally by Doctor W. O. Thompson and sponsored by Mr. Lincoln when president of the alumni association, has been helpful in this regard.*

Dr. Morrill referred to C. F. Kettering's observation that development of industrial research might go beyond the expanded activities of the Engineering Experiment Station as proposed by President Rightmire, in which case the Purdue plan would have merit. He indicated that the Purdue experience had demonstrated the foundation plan to afford larger and freer opportunity for productive relations with industry than might be possible through the somewhat legally limited Engineering Experiment Station.

Concerning the legality of incorporating a foundation comparable to that of Purdue Dr. Morrill reported:

*Pursuant to your request, I have submitted to Professor Clarence D. Laylin, of the College of Law, a copy of the Articles of Incorporation and the By-Laws of the Purdue Research Foundation, together with a copy of the so-called 'Foundation Statute' of Indiana which provides for incorporation of 'foundations' or 'holding companies' and prescribes their peculiar powers and duties in that state.*

*Professor Laylin was requested to study these documents in detail and to advise (a) whether precisely the same type of corporation could be incorporated and operated at the Ohio State University under existing Ohio Statutes, or (b) whether new statutes or some amendment of existing law would be required for this purpose, and (c) what would be the nature of necessary changes in the present laws, if required.*

*Under date of July 21, 1934, Professor Laylin advised explicitly and in detail (a) that there is in Ohio no law corresponding to the special foundation statute of Indiana and that none is needed to accomplish the purpose contemplated; (b) that provisions of the General Corporation Act of Ohio provide amply for the incorporation of a research foundation here as a corporation not for profit similar in every essential respect to the Purdue Research Corporation, although requiring some unimportant changes in terminology (viz., the designation of members of the governing board as 'trustees' instead of 'directors', etc.) and requiring certain matters to be specified in 'regulations' in lieu of 'by-laws' (as in Indiana); and (c) that the Ohio law indeed offers certain advantages and elasticity not provided in the Indiana statute - notably in protecting both the trustees and the members of the corporation from personal liability for the debts and obligations of the corporation.*

*Professor Laylin says, in sum: 'I am therefore of the opinion that if it is desired to proceed with the organization of a research body similar to the Purdue Research Foundation, to cooperate with the Ohio State University in any of its research activities, the provisions of the General Corporation Act of Ohio are amply sufficient to permit the type of organization that would seem to be desired'.*

The special committee of the Board, in concluding its report to the Board of Trustees, made the following statements and recommendations:

*It will be recognized that the generous interest and initiative of Mr. Lincoln make possible what present budgetary*

*stringency would otherwise preclude, namely, the inauguration of an expanded program of industrial research at the University. Unquestionably also the University, in undertaking a new advance in this direction, is in position to profit immeasurably by the pioneer experience and tested example of Purdue University whose friendly cooperation is appreciatively acknowledged.*

*It is the belief of the undersigned that the University should proceed at once to the organization of a research foundation; that this foundation, with some adaptation to the situation in Ohio and the special needs of this University, should parallel generally the Purdue plan; that the Engineering Experiment Station should be tied in closely with the projected foundation so that the Station's substantial service may be supplemented and stimulated thereby; that alumni interest in the formerly proposed Alumni Research Corporation should be re-directed, if possible, into participation in the creation of the foundation.*

*It is therefore, recommended:*

*That the Board of Trustees authorize and direct the Vice-President of the University, in conference with the President, to submit to the Board as soon as may be possible definite plans and proposals for the incorporation and establishment at the Ohio State University of a research foundation to assist the further and larger development of scientific, industrial and technological research at the University; and that the Vice-President be authorized and directed to request the counsel and assistance of Mr. J. F. Lincoln, Mr. Charles F. Kettering, the Dean of the College of Engineering, the Dean of the Graduate School and such others as he may desire to approach in the formulation of such plans and proposals.*

The implementation of the Lincoln plan began with the appointment of Mr. Hurlbut S. Jacoby to the staff of the Engineering Experiment Station in October, 1934 as Director of Industrial Research for The Ohio State University. In that capacity he was to represent all departments as well as the Station on matters relating to Research of an industrial nature. Mr. Jacoby's June 30, 1935 report to President Rightmire listed a number of small industrial research contracts which gave promise of the long-hoped for results.

The Ohio State University Research Foundation was incorporated on November 2, 1936.

ARTICLES OF INCORPORATION  
OF  
THE OHIO STATE UNIVERSITY RESEARCH FOUNDATION

*The undersigned, a majority of whom are citizens of the United States, desiring to form a corporation, not for profit, under the General Corporation Act of Ohio, do hereby certify:*

*FIRST. The name of said corporation shall be The Ohio State University Research Foundation.*

*SECOND. The place in this State where the principal office of the corporation is to be located is Columbus, Franklin County.*

*THIRD. The purpose or purposes for which said corporation is formed are: to promote the educational objectives of The Ohio State University by encouraging, fostering and conducting investigation and research in the physical, biological and social sciences, the humanities, and all other branches of learning; instructing individuals in the methodology of investigation and research; and utilizing, publishing or otherwise making known the results of such investigation and research, all pursuant to such arrangements with The Ohio State University as the trustees of the corporation may deem appropriate. In the event of the dissolution of the corporation, all of its property, whether real, personal or mixed, and wheresoever situate, shall vest immediately in The Ohio State University, and none of the property of the corporation shall inure to the benefit of any officer, trustee or member of the corporation.*

*FOURTH. The following persons shall serve said corporation as trustees until the first annual meeting or other meeting called to elect trustees:*

*Julius F. Stone  
Charles F. Kettering  
James F. Lincoln  
C. E. MacQuigg  
Charles F. Michael*

*IN WITNESS WHEREOF, we have hereunto subscribed our name, this second day of November, 1936.*

*Signed: Julius F. Stone  
Charles F. Kettering  
James F. Lincoln  
C. E. MacQuigg  
Charles F. Michael*

*Incorporators*

But S. Jacoby was named Research Director of the newly formed OSU Research Foundation and the first Board of Directors consisted of the following members:

George W. Rightmire, Columbus,  
President, The Ohio State University

Charles F. Kettering, Detroit,  
General Motors Corporation

Lawrence E. Laybourne, Springfield,  
Board of Trustees, The Ohio State University

Charles F. Michael, Bucyrus,  
The Ohio Locomotive Crane Co.

A. C. Fieldner, Washington,  
U.S. Bureau of Mines

Charles E. MacQuigg, Columbus,  
Dean, College of Engineering, The Ohio State University

Julius F. Stone, Columbus,  
The Seagrave Corporation

Harry A. Caton, Coshocton,  
Board of Trustees, The Ohio State University

J. F. Lincoln, Cleveland,  
Lincoln Electric

Thomas Midgley, Jr., Detroit,  
Ethyl Gasoline Corporation

W. W. Charters, Columbus,  
Educational Research, The Ohio State University

E. E. Ware, Cleveland,  
Sherwin-Williams Co.

J. L. Morrill, Columbus,  
Vice President, The Ohio State University

H. A. Toulmin, Jr., Dayton  
Patent Attorney

J. F. Cunningham, Columbus,  
Dean, College of Agriculture, The Ohio State University

Thus came to a close a fascinating epoch in the history of The Ohio State University Research Foundation, the period 1929-1936 when the Foundation was in planning.



## THE FORMATIVE YEARS

The Articles of Incorporation of The Ohio State University Research Foundation were filed November 3, 1936, but the organization was not in a position to function until the meeting of the members, March 27, 1937, at which time the directors and officers were elected.

The Foundation was organized to include five classes of members and directors:

- National Councilors
- Alumni Members
- Trustee Members
- Industrial Councilors
- Research Members

Initially all members of the Board of Trustees of the University were ex-officio members of the Foundation. The Ohio State University Association was given the privilege of naming up to ten distinguished alumni of the University as Alumni Members of the Foundation. The Board of Directors was given authority to name up to ten industrial councilors selected from industrial organizations in Ohio. The Board also was authorized to name ten National Councilors from among the distinguished engineers and research investigators selected from the membership of the Engineering Foundation and the National Research Council. The Research Members of the Foundation included the following ex-officio members:

- The Director and Assistant Director of the Engineering  
Experiment Station at The Ohio State University

- The Director or Acting Director of the Bureau of  
Educational Research at The Ohio State University

- The Director or Acting Director of the Bureau of Business  
Research at The Ohio State University

The Director or Acting Director of the Ohio Agricultural  
Experiment Station

The Director or Acting Director of the Franz Theodore Stone  
Laboratory of The Ohio State University

All Deans or Acting Deans of the Colleges and Schools of  
The Ohio State University

The Board of Directors consisted of fifteen members elected for  
staggered three-year terms from the members of the five membership classes.

The officers of the Foundation consisted of a President, a Vice  
President, a Secretary, a Treasurer, and an Executive Director. The  
officers were not necessarily members of the Board of Directors. The  
Executive Director was selected by and served at the discretion of the  
Board.

The initial officers, directors and members of the Foundation were  
as follows:

OFFICERS

President	-	George W. Rightmire
Treasurer	-	Carl E. Steeb
Secretary	-	Hurlbut S. Jacoby
Research Director	-	Hurlbut S. Jacoby

BOARD OF DIRECTORS

National Councilor Group	-	Charles E. MacQuigg Thomas F. Midgley, Jr. Charles F. Kettering
Alumni Group	-	A. C. Fieldner H. A. Toulmin, Jr. J. L. Morrill
Trustee Group	-	Julius F. Stone H. A. Caton George W. Rightmire Lawrence Laybourne

- Industrial Councilor Group - C. F. Michael  
E. E. Ware  
J. F. Lincoln
- Research Group - W. W. Charters  
William McPherson  
J. F. Cunningham  
C. E. MacQuigg

MEMBERS

- National Councilors - Thomas F. Midgley, Jr.  
L. Warrington Chubb  
Saul Dushman  
Robert B. Sosman  
Harvey Fletcher  
Clarence F. Hirshfeld  
Henry G. Knight  
Charles F. Kettering  
Charles E. MacQuigg  
Willard Chevalier
- Alumni Members - D. J. Brumley  
William N. King  
Frank H. Riddle  
J. L. Morrill  
Harry R. Drackett  
H. A. Toulmin, Jr.  
A. C. Fieldner  
Ray D. McClure  
Firman E. Bear  
G. F. Schlesinger
- Trustee Members  
(ex officio) - George W. Rightmire  
Herbert S. Atkinson  
Newton D. Baker  
M. Edith Campbell  
Harry A. Caton  
Lawrence E. Laybourne  
Burrell Russell  
Julius F. Stone  
Clinton J. Altmaier
- Industrial Councilors - Charles R. Hook  
Charles F. Michael  
Renton K. Brodie  
Harvey S. Firestone, Jr.  
William V. Fisher  
E. E. Ware  
Wallace T. Holliday  
Alexander Thomson  
W. J. Harshaw  
James F. Lincoln

Research Members

- J. F. Cunningham
- Edmund Secrest
- W. H. Siebert
- Viva Booth
- W. C. Weidler
- H. M. Semans
- George F. Arps
- W. W. Charters
- W. D. Turnbull
- J. R. Shank
- Dwight M. DeLong
- William McPherson
- H. W. Arant
- J. H. J. Upham
- Clair A. Dye
- O. V. Brumley

Hurlbut S. Jacoby, who was named the first Research Director (Executive Director), worked closely with Vice President Morrill and President Rightmire in the formative stages of the Foundation on organizational details and the program of industrial research development to be pursued. A great deal of assistance and counsel was provided by officials of the Purdue Research Foundation.

Director Jacoby reported on 14 research projects involving costs of \$26,000 which were administered through OSURF during its first year. From this modest beginning, the administrative role of the Research Foundation in the service of the University and its faculty has grown over the years to include today responsibility for more than 700 projects annually involving sponsor-supported expenditures of more than \$16,000,000.

A 16-page booklet, *Research for Industry at The Ohio State University*, describing the facilities available for cooperative research and illustrating some of the equipment and personnel was prepared under Mr. Jacoby's direction for distribution to industry. A monthly publication, *Men and Methods in Research*, was started to communicate to industry timely information concerning faculty research.

One of the outstanding innovations was the inauguration of the Industrial Research Conference, November 6-7, 1937, which was attended by 150 industrial leaders, largely from Ohio, and by an equal number of faculty members. The attending industrialists had an opportunity to visit various research activities on campus. Vice President Morrill described the organization and function of the Research Foundation. At a dinner meeting sponsored by the Ohio Manufacturer's Association, C. F. Kettering addressed the group on the topic "Pitfalls in the Rocky Road of Research." The Athletic Association entertained the visiting guests at the Saturday football game to conclude the highly successful conference.

In this initial period of operation Mr. Jacoby continued his association with the Engineering Experiment Station so that his efforts in industrial research development resulted in new programs for both the Foundation and the Station.

The Foundation's tradition of service to the University and its faculty was established early in the life of OSURF. From Mr. Jacoby's second annual report we quote,

*We can render very little aid in the solution of the [research] problem itself or even in the technique involved, but we can take a real load off the faculty man's shoulders by assuming the mechanical burden, typing, and presenting reports in commendable shape, keeping an accurate record of costs and in presenting monthly financial statements to the cooperators (sponsors) and helping to secure facilities which are needed to carry on the work to good advantage.*

May, 1937 saw the start of *Research and Invention*, a monthly subscription publication underwritten by the Toulmin Fund through the efforts of one of the Directors, Colonel H. A. Toulmin, Jr. of Dayton. John Merrill Weed assisted Mr. Jacoby in editing this periodical.

The Research Foundation also inaugurated a lecture series on subjects of interest and value to the researcher. Prominent industrialists were invited to lecture in this series.

Mr. W. J. Cameron of the Ford Motor Company was the principal speaker at the second Industrial Research Conference and at the third conference in the Fall of 1938, part of the address by Mr. Clarence Francis, President of the General Foods Corporation, was broadcast over NBC. Charles R. Hook, President of the American Rolling Mill Company, Middletown, also spoke at this conference. The mingling of Ohio industrialists with research faculty at these conferences proved an effective means of fostering improved understanding between the University and the business community.

The second year of Foundation activity found some 30 research projects involving more than \$60,000 in sponsor support in the areas of bacteriology, entomology, ceramics, chemistry, physics, physiological chemistry, agricultural chemistry, veterinary medicine, applied optics, and the Engineering Experiment Station. The Foundation worked with Professor Cecil E. Boord to secure support of the American Petroleum Institute for an on-going program of research in hydrocarbon chemistry which continued for a number of years. Prior to World War II this was the Foundation's largest sponsored research project. Faculty members in the Department of Entomology were successful in attracting several research projects on insecticides.

On November 16, 1938, shortly after the third Industrial Research Conference, Mr. Jacoby died following an appendectomy. Dean C. E. MacQuigg, College of Engineering, served as acting research director until Dr. A. R. Olpin was appointed to succeed him on February 15, 1939. At the meeting

just prior to Jacoby's death, Mr. Julius F. Stone was elected president of OSURF to succeed George Rightmire who had resigned as President of the University in June, 1938.

In his first report to the OSURF Board, Dr. Olpin stressed the growing number of research fellowships available to support graduate students through Research Foundation projects. He also reported that the Foundation had contributed funds to the University from the American Petroleum Institute project in order that a building might be built on campus to house the API project. An article on *Industrial Pathology* by Professor E. von Haam appearing in *Men and Invention* attracted a great deal of attention.

The Industrial Research Conference on November, 1939 featured exhibits of industrial research in ceramics, chemistry, entomology, and pathology. Following the pattern of the previous conferences, the invited principal speaker was Mr. Henry P. Kendall, President of the Kendall Company, Boston.

The new Research Director began studies of the proprietary rights of sponsors with respect to research findings, patent policies, overhead charges, and related administrative policies and procedures affecting Foundation operations. In the fourth annual report of the director, Dr. Olpin cited the numerous inquiries received by OSURF from other universities which had just established or contemplated creating a separately incorporated research foundation. He reported that Dean MacQuigg had participated in a national symposium on Industrial Research in Universities, sponsored by the Industrial Research Institute, where he described the organization and functions of The Ohio State University Research Foundation.

Dr. Olpin reported that there were 40 research projects active in the year ending September 30, 1940, on which 60 graduate fellows were employed and for which sponsor support in the amount of \$97,249 was received. He reported

*It is encouraging to note that many of our researchers are overlapping the boundaries between departments and even colleges on the campus. For the second consecutive year the Foundation received no subsidy from the University for operating expense.*

The offices of OSURF were moved to the third floor of the Administration Building in mid 1940, an event on which the director commented as follows:

*As Research Director of the Foundation, I wish to express appreciation to the University for providing these quarters. Our present location makes us neighbors to the Graduate School, the Alumni Office and the Business Office. Our frequent dealings with these departments should now be expedited. Moreover, the mistaken idea held by so many individuals on and off the campus, that the Foundation is essentially an engineering affiliation may soon disappear.*

Beginning in January, 1940, the bulletin *Science and Appliance* replaced *Research and Invention* and *Men and Methods in Research*. This bulletin, edited by J. Merrill Weed, continued until June, 1964.

The Industrial Research Conference which had been such a successful OSURF activity in the previous year was not held in the Fall of 1940 "in view of the unsettled state of affairs in this country ... resulting from the war abroad and the national defense program at home" as reported by Dr. Olpin. So closed the pre-war years of the Research Foundation and the end of a total commitment of OSURF to development of industry-oriented research which was never to be reestablished.



## THE WORLD WAR II YEARS

In 1941 The Ohio State University Research Foundation was caught up in the all-out effort of the United States to marshall its resources for national defense. The emphasis of industrial research as a ~~major~~ resource in that period of national emergency was a tribute to the perception of J. F. Lincoln, J. L. Morrill, and the others whose persistent efforts resulted in the creation of the Research Foundation as a means of fostering industrial research.

Emphasizing the importance of industrial research President Roosevelt said

*One of the greatest resources in the arsenal of Democracy is our national ability and interest in Industrial Research. For the vigorous prosecution of our defense program and for the assurance of national progress after the emergency we rely heavily on the continued vitality of research by industry in both pure and applied science ...*

A National Research Council report published by the National Resources Planning Board entitled, *Research - A National Resource: II Industrial Research*, called attention to the importance of industrial research in support of defense and to the post-defense emergency period. The importance of university research in the defense effort was stressed. The Office of Scientific Research and Development (OSRD), the National Advisory Committee on Aeronautics, the Army, and the Navy all solicited assistance from universities in research efforts related to national security. Industries involved in defense contracts sought aid from universities in finding ways to improve products and processes.

The industrial research development of the Foundation continued to expand in 1941, but government defense research contracts awarded to the

University through the Research Foundation greatly increased the level of activity. In October, 1941 OSURF had under contract sponsored research amounting to a volume of about a quarter of a million dollars annually. This was equivalent to the total amount of sponsor support received in the previous four years of the Foundation's existence.

On January 15, 1941 President Howard L. Bevis assigned authority to represent the University on all defense research matters to Research Director Olpin of OSURF. Subsequently a defense research program was established at the University through the Foundation involving about a dozen contracts with the Federal Government. National security measures precluded publicity about the University's involvement in the defense research program.

The impact of the defense research contract administration placed new and much greater burdens on the Director of the Foundation and his staff. The secretarial work associated with contracts and appointments was carried out by Miss Patricia Slatzer who continued to serve on the staff of the Foundation until her retirement early in 1969.

A particularly noteworthy passage from Dr. Olpin's report of October, 1941 is that referring to J. L. Morrill as follows:

*... I would consider that I had failed in my duties if I did not publicly thank Mr. J. L. Morrill, while he is still with us, for the inspiration and helpful assistance he has always given me, and for his sound judgment on all matters of policy. He has nurtured the Foundation from its beginning; he has envisioned its potentialities perhaps more clearly than anyone else. His resignation to accept the Presidency of the University of Wyoming, will be keenly felt.*

The Foundation encountered a new operating problem with its involvement in government contracts. Industrial sponsors normally provided money in advance to pay research costs, whereas the Federal Government paid

only vouchers submitted for completed work. For this reason the Foundation had to pool resources available in its Research Reserve and Operating Reserve accounts to meet current project costs. In another modification of fiscal procedures, upon recommendation of Carl Steeb, OSURF Treasurer and OSU Business Manager, the Foundation assumed the responsibility for paying all sponsored research costs except salaries and wages directly, rather than through State rotary accounts, as a means of simplifying and expediting such payments.

University historian, Professor James E. Pollard, writing on the Bevis Administration<sup>(1)</sup> deals in considerable detail with the research role of the University and the Research Foundation in a chapter on Wartime Research (pp. 140-184). No attempt is made here to duplicate Dr. Pollard's interesting and detailed account of this eventful period.

During the fiscal year ending September 30, 1942, the Foundation administered some 44 industrial and 30 government contracts. Contracts for the following year were expected to involve nearly \$2-million in research support.

The Foundation was taxed to the limit with the responsibilities of administering war research programs. There were many requests to draft boards seeking deferment of key research personnel and most purchases of equipment and supplies required the filing of priority forms. There was also the problem of obtaining security clearance for research personnel

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(1) James E. Pollard, *The Bevis Administration 1940-1956, Part I: The University in a World at War 1940-1945*, Vol. VIII, History of The Ohio State University, 1967, 291 pp.

and in maintaining security control on the laboratories in which the research was conducted.

The war research programs were supported by the Office of Scientific Research and Development, the National Advisory Committee on Aeronautics (through the National Research Council), the Army, and the Navy.

To facilitate the University's war research programs, construction was rushed on the War Research Laboratory which adjoined the Engineering Experiment Station on 19th Avenue.

Among the more notable research activities were:

- A program for the development of more effective methods of training pilots in the recognition and identification of aircraft and surface ships under Professor Samuel B. Renshaw, Psychology.
- The development of criteria of flight competence for use in the selection and training of aircraft pilots, a program supervised by Professor Robert Y. Walker.
- Cryogenic research to produce "heavy water" from liquid hydrogen for the Manhattan Engineering District (Atomic Bomb Project) under Professor H. L. Johnston.
- The development and investigation of various types of airborne antennas under the direction of Professor E. E. Dreese.
- The study of physiological effects of explosive decompression under the direction of Professor F. A. Hitchcock.
- The preparation of various hydrocarbon compounds for propellant and related purposes under Professor A. L. Henne.

The Foundation was particularly successful in attracting among its industrial research sponsors a number of trade associations which sponsored research activities for the benefit of member companies. This was particularly significant since such associations normally had well-conceived

research objectives, high standards for judging research competency, and they demanded responsible, effective administration of research funds.

The Foundation maintained programs for many of its pre-war industrial research sponsors throughout the war, but some new and continuing programs had to be held in abeyance because of lack of manpower, equipment, and materials.

In the year 1942-43 the value of research contracts reached a new high of \$1.6-million due in large measure to the million-dollar aircraft recognition project. This program began to taper off in 1943-44 when the total contract value dropped to \$1.5-million for 81 programs. The value of the 77 programs in 1944-45 was \$897,955 in the period when many of the OSRD contracts were being terminated or transferred to the military or other federal agencies for continuing support.

The Research Foundation and faculty members received numerous letters of commendation and citations from the Army, Navy, and OSRD for contributions to the war through research. One such letter is quoted herewith:

10 March 1945

Dear Dr. Olpin:

*My attention has been called to the outstanding contribution to the war effort which has been made by you and your associates, and on behalf of the entire Signal Corps I take this opportunity to thank each and every one of you.*

*Early in February of this year, an urgent request was received from the European Theater of Operations for special equipment needed for pending offensives. An appeal was made to your Foundation, and your immediate response in the emergency resulted in the completion of this vital equipment by 28 February. In accomplishing this feat, I am informed, the Foundation found it necessary to operate as much as sixteen to twenty hours per day.*

*In January of this year, I am told, your cooperation enabled the Signal Corps to ship to the Southwest Pacific Area by 1 February a consignment of similar equipment produced by a new process developed by your organization.*

*I congratulate all of you for your patriotic services to your country, and commend you for a job well done.*

*Sincerely yours,*

*(Signed) H. C. Ingles*

*H. C. Ingles,  
Major General,  
Chief Signal Officer*

Among the awards received was one from the Manhattan Engineering District for the cryogenic work directed by Herrick L. Johnston in contributing to the atomic bomb project.

It was during the war period that Thomas E. Davis transferred from project administration to the central office of the Research Foundation to assume responsibility for many of its administrative functions. Mr. Davis remained with the Foundation until his retirement in 1967, having been appointed Associate Executive Director in 1960.

As an outgrowth of the program of problem-oriented research for industry the Research Foundation became very much involved in patents and patent policy. Director Olpin devoted considerable effort to patent policies and to matters relating to promotion and development of patents. The policy was summarized by Dr. Olpin as follows:

*The operation of The Ohio State University Research Foundation is based on a desire to confer the greatest good to the greatest number. In general, this requires adequate patent protection to insure the development and use of the invention. Specifically, transfer of patent titles may be indicated in some cases; licenses, exclusive and non-exclusive, in others.*

*In its practices, the Foundation has to determine in each case what the character of its partnership, if any, should be. In some cases, the Foundation is merely an assistant in getting improved materials or methods before the public. In other cases, the Foundation has a continuing obligation to follow through and share the problems of promoting their use in the public interest. It is not the intent hereby to commit the Foundation to manufacturing or sales promotion.*

By the end of World War II the Research Foundation was the owner of 23 patents - 16 granted in the United States and 7 in Canada; there were 26 patent applications pending. On patents derived from government-sponsored research the Foundation was required to grant the government a non-exclusive, royalty-free license to use these inventions.

Royalty income from patents during the war years 1942-45 was \$3,752.92 and under the Foundation's incentive plan the respective inventors received 25 per cent of the royalties paid to the Foundation.

Upon leaving the Foundation Dr. Olpin urged that greater effort be placed on promoting the use of patents resulting from OSURF research projects and that the royalty income be used to promote basic research efforts within the University.

Dr. Olpin resigned as Director of the Research Foundation effective December 31, 1945, to become President of the University of Utah. Under his capable leadership during the World War II period The Ohio State University Research Foundation served the University and the United States in a very effective manner. Dr. Olpin was an effective representative of Ohio State on the national scene during these critical years. His departure ushered in the post-war period of adjustment in university research and a new set of challenges for the Research Foundation. For an interim period following his departure Thomas E. Davis served as acting director.

## THE POST-WAR EPOCH

The first post-war year was the Research Foundation's tenth year of operation. It was a year of many uncertainties and adjustments. Many of the war research activities were terminated during the previous year and some were continued on a modified basis with government support, primarily by the military services.

On February 15, 1946, Dr. James S. Owens became the third executive director of the OSU Research Foundation, replacing Ray Olpin. E. D. Carter joined the Foundation staff as purchasing agent to succeed E. P. Gilmore who became assistant purchasing agent of the University.

Dr. Owens, in his first annual report to the Board, very succinctly stated the primary objective of the Foundation as follows:

*The basic function of the Research Foundation is the integration of the researches of mutual interest to the University and to industry and government into the University graduate research program in such a manner that the conduct of and the results obtained from these researches will be of distinct mutual value to the University and to the cooperating organizations. This procedure affords a means for enhancing the research and educational work of the University, for betterment of the welfare of the people, and for increase in the value of industry. The full attainment of this function can be realized only with adequate laboratory buildings, supervisory research personnel, and experimental facilities.*

In the fiscal year ending September 30, 1946, research projects administered through the Research Foundation involved \$900,827 in sponsor support, an amount slightly higher than the previous year but still well below the \$1,594,000 peak of the wartime year 1942-43. In that year the Foundation had 56 industrial contracts and 46 government contracts. Twenty-six departments of the University were involved in research activities through



the Research Foundation with the departments of Chemistry and Electrical Engineering being the center of greatest activity. The Air Materiel Command at Wright Field sponsored the largest volume of military research.

Director Owens reported that it was virtually impossible to find space in existing campus laboratories for new research projects and that opportunities to expand research were being limited by inadequate research facilities.

To provide a temporary solution to the problem of research space the Research Foundation proposed obtaining access to and reconditioning of the old Laneview School. This idea ultimately was abandoned as too costly for the space which would be obtained. The Foundation meantime was instrumental in acquiring ten modified quonset huts on a loan basis from the Army to house "research projects of definite value to the Government for national welfare purposes and of direct interest to the University." Funds from the Research Reserve of the Foundation were used to recondition these facilities. However, these additions provided only about 10,000 square feet of research space and merely provided temporary stop-gap relief in the perennial space problem which hampered the growth of sponsored research at The Ohio State University in the ensuing years. The Executive Committee of the Foundation recommended to the President of the University in 1946 that a basic laboratory building to provide a minimum of 720,000 cubic feet of space be built by the University and allocated to Foundation-administered sponsored research programs.

On September 25, 1946, President Bevis appointed a committee headed by N. Paul Hudson, Dean of the Graduate School, to study the allocation of

grant-in-aid funds made available for stimulating fundamental research. These funds were made available by way of a transfer of \$100,000 from the Foundation's Research Reserve to the University 1945. The committee reported that \$56,000 had been allocated prior to October 1, 1946, and recommended that reports from the grant recipients be made to provide a basis for subsequent allocations.

The year 1947 was marked by a significant upswing in sponsored research activities. The Foundation reported 55 industrial and 58 government projects active during the year with expenditures of \$1,592,783. Of the indirect costs recovered, \$281,960 was credited to the Research Reserve. During that year research projects of the Engineering Experiment Station and the Departments of Physics and Astronomy, Mechanical Engineering, Physiology, and Psychology more than doubled in aggregate volume.

Director Owens' report of the research activities interestingly enough listed in succession two research projects, one concerned with investigation into the constituents of cigarette smoke supported by P. Lorillard Co., Inc. and the second in cancer research through a study of chemical compounds supported by the American Cancer Society.

The Foundation in this post-war period began to stress the importance of sponsored research in the training of graduate students. Reporting in 1947 that 182 graduate students were employed on Research Foundation projects, Dr. Owens said

*Under the cooperative research program, the Foundation renders a significant service, in cooperation with the Graduate School and the different Colleges and their Departments, not only in increasing the effectiveness of research in the University, but also in promoting a close relationship between the University and the sponsoring organizations for the support of graduate instruction and the training of research personnel, as well as for the solution of scientific and technical problems of mutual interest.*

*The employment of graduate students on the staffs of Foundation projects on a part-time basis is an important factor in the achievement of a basic purpose of the Foundation, as contained in the Articles of Incorporation, namely, the promotion of educational objectives and the training and development of scientific investigators and research personnel. This employment furnishes to the students not only financial aid but also valuable supplementary educational training and development of research ability. It aids materially in providing for our country's needs, a larger body of trained personnel with practical research experience.*

With Dr. Owens as program chairman, the Foundation cooperated with the Engineering College Research Council (ECRC) to stage a conference on the organization and administration of cooperative research at the annual meeting of ECRC and the American Society for Engineering Education in Minneapolis in June, 1947. The meeting, which was attended by representatives of 44 universities, received many favorable comments.

Alpheus Smith was elected president of the Foundation for 1946-47, and Julius F. Stone, a member of the University Board of Trustees who had succeeded President Rightmire as president of OSURF, became chairman of the board, a position which he held until his death in July, 1947.

During the year ending September 30, 1948, the Foundation reported administering 50 industrial and 70 government contracts as compared with 55 and 58 respectively, for the preceding year. The dollar volume of industry contracts was up 7 per cent and government contracts 23 per cent over the previous year. Sponsors provided \$2,120,000 for support of research projects administered by OSURF in that year, a level 33 per cent higher than the previous year. There was a noticeable shift in the growing number of government contracts from war research to fundamental research for the acquisition of new knowledge. The sponsored research activity of the Department of Aeronautical Engineering increased significantly during this period.

The problem of finding adequate research space continued to be the number one concern of the Foundation, for it could be seen that research, and particularly interdisciplinary research, opportunities of the University would be limited by lack of laboratory space.

During the year the Foundation acted as host for meetings of various groups held on the University campus. These included a Cryogenic Conference in October, 1947 under the auspices of the Office of Naval Research; a meeting in the same month of the Panel on Radiating Systems of the Research and Development Board; a Housing Conference in December, 1947, with participation by representatives of a number of universities and private research institutions interested in various aspects of housing research problems; in June, 1948, a meeting of the Manufacturing Committee of the Institute of Boiler and Radiator Manufacturers; and in August, 1948, a combined meeting of the Executive Committee and the Research Committee of the Ohio Retail Lumber Dealers Association. Members of the research and administrative staffs participated in the Symposium on Molecular Structure and Spectroscopy held in June, 1948, under the joint auspices of the Graduate School and the Department of Physics and Astronomy -- an open house of the campus laboratories in which such work was being conducted, including a number of Foundation projects, was a feature of the Symposium.

As a part of the Twelfth Annual Meeting of the Foundation Members on November 4, 1948, the Research Foundation sponsored a special program of addresses on "Research - A Human Resource" as a feature of the Seventy-Fifth Anniversary Celebration of the founding of the University.

Speakers for this program were: Major General A. C. McAuliffe, Deputy Director of Logistics for Research and Development, Army General

Staff; Dr. Edgar C. Bain, Vice President, Research and Technology, Carnegie-Illinois Steel Corporation; and Dr. Hugh S. Taylor, Dean of the Graduate School, Princeton University. The invited audience included the Members of the Research Foundation, the University administration and faculty, research staffs of Foundation projects, representatives of the State and Federal Governments, industrial firms of Ohio and neighboring states, and business and civic organizations in Ohio. These addresses received good newspaper coverage and in December, 1948 were also broadcasted by transcription over Station WOSU.

L. L. Stout joined the Foundation staff in November, 1947, and W. L. Hole in May, 1948, to provide assistance in project organization and contract preparation and negotiation. Mr. Stout brought to OSURF a background in patent and licensing matters.

Beginning with the year 1948-49 the fiscal year of the Foundation was changed to end on June 30 instead of September 30 so that it conformed to the fiscal year of the University. For this reason that fiscal year consisted of only nine months. During the period ending June 30, 1949, the Foundation reported 134 research projects with 46 supported by industry and 88 by government. Sponsor support amounted to \$1,895,390 for the nine-month period.

The pattern of research growth continued with the greatest emphasis on the physical sciences and engineering. In 1948-49, 25 departments were active in sponsored research including the Departments of Mineralogy and Radiology for the first time.

At its meeting on November 5, 1948, the Board of Directors considered in some detail the important problem of how to make the most effective

use of funds available in the Foundation's Research Reserve for the support and further development of research in the University. The desirability of continuing to support non-sponsored research in the University was noted. Consideration was also given to the needs for adequate laboratory and administrative space, facilities, and supervisory personnel of the present and future potential sponsored research programs administered by the Foundation. It was recognized that the Foundation had attained a level of operation at which it should work out with the University administration a coordinated plan for the allocation of available Research Reserve funds, taking into account the needs of the University research programs, both sponsored and non-sponsored, in order to improve the overall research position.

Following authorization by the Board of Directors, the President of the Foundation appointed a committee with Dr. Harlan H. Hatcher, Vice President of the University as its chairman, to study this problem and to make recommendations to the Board with regard to a long-term plan for the allocation of funds from the Research Reserve.

The Executive Committee, meeting on March 12, 1948, heard a report on the importance of the supersonic wind tunnel to the research program in high-speed aerodynamics which would benefit the College of Engineering, the School of Aviation and other divisions of the University. In view of the lack of sufficient funds for this purpose from other sources, the Executive Committee authorized that \$47,000 from the Research Reserve be made available to the University, upon the request of the University, to assist in the completion of the wind tunnel.

Continuing to be plagued by a lack of research space for sponsored programs the Foundation, in cooperation with the University administration, renovated three two-story barracks buildings on West Hardin Drive in the River Road Dormitory area to house research projects not involving extensive laboratory installations and equipment. These buildings provided about 12,000 square feet of additional space which was assigned primarily to house mapping, charting, and reconnaissance projects which were previously housed in widely scattered locations.

The Committee, named in 1948 by Foundation President Smith and headed by University Vice President Harlan H. Hatcher, reported to the Board at the annual meeting on October 14, 1949. The Committee recommended that the Research Foundation should follow a policy of making allocations in substantial sums directly to the University for fostering research. It was further stipulated that all recipients of grants from these funds, as administered under the direction of the President of the University, were to report in detail annually to the President of the University as to the manner in which the grants were spent, the progress toward or the contributions to knowledge obtained therefrom, the strengthening and support of the University research program and stature accomplished thereby, and that this report shall be available to the Research Foundation.

The Thirteenth Annual Meeting of the Members of the Foundation on October 13, 1949 was highlighted by two discussion periods regarding the advancement of research. The morning program was devoted to research opportunities and responsibilities of land grant universities and the place of research in our national life. President Smith spoke on "Research

in a Land Grant University" (subsequently published in the February, 1950 issue of the Graduate School Record), and as further impetus to discussion Mr. Adams spoke on some of the broad aspects of research including its intangible values.

The subject of the evening program was "Present and Future Opportunities in Research," with particular reference to the better utilization of these opportunities through sponsored researches in which the University can cooperate with off-campus organizations. For this program the Members of the Foundation were joined by invited members of the University administration and faculty, and of the research staffs of Foundation projects. The discussion was initiated by short talks on the following subjects by Members of the Foundation:

Electrical Industry  
Ceramic and Plastics Industry  
Chemical Industry  
Fuels Industry  
Nutrition and Agriculture  
Industry and Economic Research

Saul Dushman  
Games Slayter  
F. W. Blair  
A. C. Fieldner  
R. C. Newton  
E. G. Bailey

Informal discussions which brought out a variety of ideas with regard to the advancement of research followed the talks at both the morning and evening meetings. The evening meeting also served as a means for better personal acquaintanceships and exchange of views between the Members and the faculty and research staff.

The Foundation, in December, 1949, negotiated an indirect cost rate of 47 per cent of salaries and wages for government contract research programs effective for the period July 1, 1948 - December 31, 1951. This rate was based on recently established cost principles worked out between representatives of the military agencies and the larger research-oriented educational



institutions. In this same year, because of the rapid growth of government research at Ohio State, a resident auditing staff representing the Federal Government was established on campus to provide a continuous checking of fiscal records associated with sponsored research. Inasmuch as a great deal of research equipment and related property was acquired under government-sponsored research, it became necessary for OSURF to establish a property control system to provide continuous inventory of such equipment.

In November, 1949 Raymond S. Bugno came to the Foundation to work with Mr. Davis and Mr. Carter in establishing a research property inventory and control system. His association with contractual and administrative affairs of the Foundation subsequently led to his appointment as Director, Administration and Services Division and Deputy Executive Director in 1967.

During the year ending June 30, 1950, the Foundation reported 138 sponsored projects, 51 of which were non-government and 87 were government. The dollar volume of sponsor support was \$2,390,100. The research involved 27 departments, including the following departments which were participating for the first time: Botany, Plant Pathology, Economics, and Speech. Significant increases in activity were reported in Psychology, Aeronautical Engineering, Zoology and Entomology, Ceramic Engineering, Radiology, and Poultry Husbandry. The College of Engineering combined with the College of Arts and Sciences, accounted for more than 40 per cent of the total volume. There were 43 industrial and association sponsors and 13 sponsoring government agencies.

By June 30, 1950 the Foundation reported 516 individuals appointed full-time to the research projects of the Research Foundation. Some 422 of these were professional personnel. In that year, 281 members of the research staff were registered in the Graduate School, and of these 35 were awarded the Ph.D. and 43 received Master's degrees.

During the year the Foundation, in cooperation with the University, converted another barracks building in the River Road Dormitory area into research space to house the program of the Personnel Research Board which was engaged in a number of interrelated research projects funded by government contracts and a Rockefeller Foundation grant under the direction of Carroll L. Shartle. Even though additional temporary space had been found for research activities over these several post-war years, lack of space was the largest single deterrent to the growth of sponsored research in that period.

With the growing volume of government relations, the administrative staff of the Research Foundation became increasingly involved in difficult negotiations with Federal agencies concerning contract provisions. Government contract policies, developed primarily for industrial procurement, contained many clauses which were not compatible with University policies and procedures. Through its negotiations, the Foundation always sought to protect the University and the faculty researcher.

In accordance with the recommendations of the Hatcher committee the Board had appropriated \$350,000 from the Research Reserve to be transferred to the University, to be administered under the direction of the President of the University for fostering research:

- (a) \$100,000 for fellowships, research assistantships, grants-in-aid, and allied supports for research, new or continuing;
- (b) \$250,000 for replacement of worn out or obsolete equipment, construction and repair of equipment, purchase of capital equipment and research apparatus, and for special research grants to specific University departments and areas.

It was especially gratifying that this total grant was more than three times as large as that allocated in any previous year.

Upon the recommendation of the University Committee for the Allocation of Research Foundation Grants, appointed by the President of the University and under the chairmanship of Dr. N. Paul Hudson, Dean of the Graduate School, the \$100,000 portion of the total grant was allocated in April, 1950 for the support of 70 researchers in 31 departments of the University, primarily for research fellowships and assistantships. The distribution of these grants-in-aid for the University year 1950-1951 comprised 7 post-doctoral fellowships, 32 pre-doctoral fellowships, 18 research assistantships, 12 technical assistantships, 1 substitute's salary, and 12 grants for materials, construction of apparatus, and travel for research purposes. However, as of the end of the fiscal year 1950, only \$21,500 of the \$250,000 portion of the total grant had been allocated by the University. This consisted of two allocations for equipment in specific research areas and a supplemental amount for allocation by the University Committee for the Allocation of Research Foundation Grants.

During the preceding ten years the Research Foundation had appropriated from its Research Reserve a total of \$885,243 for the furtherance and support of research in the University, but approximately 93 per cent of

this total had been appropriated in the preceding five years. Of this total sum, \$715,409 had been appropriated for the support of non-sponsored research in the University, and had been allocated for fellowships, assistantships, materials, and research equipment. Grants had been made from these funds to some 45 departments in the physical sciences, biological sciences, social sciences, and humanities.

A sum of \$169,834 from the above total had been appropriated to provide additional laboratory space and facilities that were necessary for the undertaking in the University of a large amount of sponsored research for which sufficient facilities were not otherwise available. Approximately 60 per cent of these funds had been used to furnish space and facilities that permitted the undertaking of research programs of mutual scientific value to the University and to the sponsors. These programs, with a total contract value of over \$2,700,000, were accepted and conducted during the preceding three and one-half years in the Departments of Chemistry, Electrical Engineering, Mechanical Engineering, Physics and Astronomy, Psychology, and the Engineering Experiment Station. The programs thus made possible contributed significantly to broadening the scope of the University's research and to the maintenance and expansion of outstanding laboratories in several scientific fields. The remaining 40 per cent of the funds had been used to provide additional needed facilities for the effective conduct of the diversified program of sponsored research.

At the Fourteenth Annual Meeting of the Members of the Foundation on October 26, 1950, there was an extended discussion of the possible impact of the military situation and the national defense program on University

research, with particular reference to the cooperative research program administered by the Research Foundation. The discussion was initiated by the following Members of the Foundation, who spoke briefly from the points of view indicated:

<i>University Research</i>	C. E. MacQuigg
<i>Industrial Research</i>	H. M. Williams F. W. Blair Howard E. Fritz Games Slayter R. C. Newton
<i>Government Non-Military Research</i>	A. C. Fieldner
<i>Government Military Research</i>	Harvey Fletcher
<i>Manpower for Research</i>	Carlton S. Dargusch

The technical meeting in the afternoon consisted of an outline of research activities in Physics by H. H. Nielsen, Chairman of the Department of Physics and Astronomy, and in Astronomy, by Professor J. Allen Hynek. This was followed by a tour of the facilities of the department, particularly the New Physics Building into which the department was moving at the time of the meeting.

For the evening dinner-discussion meeting, the Members were joined, by invitation, by about 125 additional members of the University administration and faculty and of the research staffs of Foundation projects. The theme for this discussion period was "Trends in Transportation Research." Three phases of this theme were presented by the following Members of the Foundation who served as speakers to initiate the discussion:

<i>Making the Most of Motor Fuels</i>	T. A. Boyd
<i>Some Metallurgical Requirements for Transportation</i>	Anson Hayes
<i>Transportation with Relation to Rubber</i>	Howard E. Fritz

The operations of the Research Foundation during its fifteenth year, ending June 30, 1951, continued to increase. There were 151 active projects with 52 sponsored by industry and other private sources and 99 by government. Sponsor support during that year amounted to \$2,666,733. Graduate students appointed to OSURF projects numbered 306.

From the modest beginning in 1936 when there were 14 projects with sponsor support of \$26,000 the growth of sponsored research administered by the Foundation had indeed grown remarkably in the 15 years. This growth was remarkable in the light of burgeoning enrollments and the related problems of growth of the University. It is probable, however, that had adequate research facilities been available, the growth in sponsored programs in the post-war years of this 15-year period might have been significantly greater.

In 1950-51 the Department of Civil Engineering and the Bureau of Business Research were involved in projects administered through the Research Foundation.

Director Owens reported on the growing involvement of the Research Foundation in interuniversity exchanges of information on research policies and procedures and in joint efforts with other universities, government agencies, and industrial representatives to develop a favorable climate for university research as a vital component of the educational process.

During 1951 a portion of the Research Foundation administrative offices were moved from crowded quarters in the Administration Building to the Communications Laboratory Building. In June, 1951, construction was begun by the University, using funds transferred from Research Foundation Reserves, on a two-story wing to the War Research Building on 19th Avenue to house the administrative offices of the Foundation.

At the end of 15 years of operations OSURF had received a net total of \$57,600 from royalties and the assignment of titles to specific patents. In addition to these monies the Foundation had also recovered additional special charges made to industries wishing to protect proprietary interests in research findings from programs which they sponsored.

At the Annual Meeting of the Foundation in October, 1951, the Board of Directors authorized the setting aside of \$525,000 as a reserve toward the cost of additional research facilities for the University. With additional funds which might become available from one source or another in the succeeding year or two, it was hoped that construction could be started. It was reported that President Bevis had appointed a committee to review the most urgent needs for research laboratories and to make recommendations as to the type of structure and the particular fields that might best be served. Hope was expressed that adoption of a laboratory facilities plan would help materially to correct some of the current deficiencies in physical plant and permit the undertaking of certain interdepartmental studies not previously possible.

Also at the Annual Meeting in October, 1951, the Board again appropriated to the University from Foundation Reserves a substantial sum (\$175,000) for the support of non-sponsored research. As in previous years, this was used principally to subsidize fellowships and research assistantships, and as grants-in-aid. An amount not to exceed \$25,000 of the total was designated for research equipment and supplies. Allocation of grants was made under the direction of the President of the University, on recommendation of the University Committee for the Allocation of Research Foundation Grants.

At the close of 1951 Dr. James S. Owens resigned as Executive Director of the Research Foundation to accept the position as Assistant to the Manager, Ceramics Division, Champion Spark Plug Company, Detroit. Thomas E. Davis served as Acting Executive Director until the appointment of Oram C. Woolpert, M.D., Ph.D., effective February 1, 1952.

The Research Foundation under the guidance of Dr. Owens was a dynamic force in the building of sponsored research which contributed significantly to the growth of graduate studies in the post-war years. The Foundation worked effectively with the University in capitalizing on opportunities to build research programs and, in the process, to contribute to the growth of newly emerging departments such as Aeronautical Engineering. The Foundation pressed the University hard during this period to increase its research facilities. Under Dr. Owens the Foundation made a very successful adjustment from the pressure-packed wartime research activities to the post-war period which was witnessed by an unparalleled growth of fundamental research with the emergence of the programs of university research sponsored by the Office of Naval Research (ONR), Atomic Energy Commission (AEC), and the National Institutes of Health (NIH). The National Science Foundation also became a supporter of university research in the early Fifties, but the OSU Research Foundation did not administer NSF grants for the University until 1958. As a result of World War II, it is evident that research became accepted as an activity important to the success of human enterprise and a new era opened with regard to public support of university research.

In the year ending June 30, 1952, Dr. Woolpert reported 168 active research projects distributed among 31 departments of the University, of



which 51 were sponsored by industry and other non-government agencies and 99 by government agencies. Support for the projects amounted to \$3,181,000, an increase of 19 per cent over the previous year.

Among the departments engaged in sponsored research through OSURF for the first time were the Bureau of Educational Research, Geology, Mathematics, Sociology, and Welding Engineering. It was in the year 1952 that the Mapping and Charting Laboratory was transferred from the Engineering Experiment Station to the Department of Geology.

The Foundation moved during the year into the newly completed offices on 19th Avenue (now occupied by the Graduate School), and the administrative staff was strengthened by the addition of two faculty members on a half-time basis: Social Sciences - Associate Professor Alvin E. Coons, Department of Economics, and Physical Sciences - Associate Professor George E. MacWood, Department of Chemistry. For the first time the Foundation acquired the full-time services of an editor with the appointment of Robert T. Hyde.

In the spring of 1952 two men who had long been associated with Foundation affairs died. Death came on April 2 to Lewis E. Chubb who had served three terms as a Director and two as Vice President. Dean of Engineering Charles E. MacQuigg died on April 24. He was one of the founders and a perennial friend of the Foundation.

Executive Director Woolpert in his first annual report stressed that Ohio State lacked significant State and endowment support of research so that it was imperative for the University to seek outside support through aggressive sponsored research efforts. He cited the lack of proper research space as the principal impediment to further major expansion of sponsored research activities.

The 17th Annual Report of the Research Foundation for the year ending June 30, 1953, marked another first in Foundation history. The report was formally published in printed form to permit wider dissemination of information concerning research activities of departments and to focus on broad trends in research. The descriptions of individual research projects which had been included in the earlier reports were dropped.

In FY 1953 the Foundation had 190 active projects, of which 134 were government sponsored and 56 were sponsored by industry and other non-government agencies, in the amount of \$3,830,736, an increase of 20.4 per cent over the previous year.

Notable among the new programs was a summer field expedition to the polar icecap area of Greenland by an Ohio State team under the leadership of Professor Richard P. Goldthwait of the Department of Geology. This program was the forerunner of the Institute of Polar Studies.

The Board of Directors, at the Annual Meeting of the Foundation in 1951, had set aside \$525,000 as a reserve for acquiring additional University research facilities. A further sum of \$475,000 was added to the reserve in 1952, bringing the total to \$1,000,000. In 1953 approximately \$880,000 in United States bonds was transferred from this to the University by action of the Executive Committee. At the request of the OSURF Board of Directors, President Bevis appointed a University committee in 1953, with Vice President Frederic W. Heimberger as chairman, to study and recommend alternatives for the future utilization of such reserve funds.

The year ending June 30, 1954 saw a tapering of the rate of growth of the three previous years because of a curtailment of military spending and the fact that staff and facilities of the University were reaching

their limits of capacity to undertake sponsored research. The Foundation administered 189 active projects during the year of which 137 were government sponsored and 52 were supported by industry and other non-government sponsors; sponsor support amounted to \$3,881,060.

Two very significant developments took place during the year 1953-54 which, for the time being, relieved the research space problem. The University in response to continuous urging from the Research Foundation was considering the construction of a research facility. The Foundation had transferred \$1,000,000 from the Research Reserve toward this project and the borrowing of an additional \$1,000,000 to finance the structure was being contemplated. Meantime the plant of the Rockwell Manufacturing Company on Kinnear Road, adjacent to the University West Campus land, became available for purchase. After study and negotiation by the University and the Foundation, the property was purchased at a price of \$1,082,000. The buildings, located on a 13-acre site, included 16,000 square feet of office space, 94,050 square feet of plant space, and 7,000 square feet of auxiliary structures. The complex was designated The Ohio State University Research Center and President Bevis appointed a committee, headed by Dean Alpheus Smith, to study the use to which the facilities should be put.

In that same year the Board of Directors authorized expenditures up to \$400,000 for the erection of a building to house the Antenna Laboratory of the Department of Electrical Engineering which faced eviction from a temporary building on the site of the new University sports arena, construction of which was eminent. There was some thought of locating this laboratory

at Don Scott Field but a site just west of the new Research Center on Kinnear Road was selected and construction was undertaken with a scheduled completion date of early 1955.

The Foundation produced a *Project Supervisor's Manual* which brought together in one single reference the policies and procedures governing sponsored research programs.

A review committee consisting of Professors E. L. Bowers and E. E. Dreese, Dean N. Paul Hudson, Vice Presidents F. W. Heimberger and J. B. Taylor, and Executive Director Oram C. Woolpert, Chairman, had been appointed by President Bevis in July, 1952 to "reexamine the Foundation's program with possible implications for its reorganization." This committee submitted its final report to President Bevis in May, 1954 for review by the Board of Trustees of the University before being considered by the Foundation's Board of Directors. This procedure was followed inasmuch as the Foundation was established initially at the instigation of the Trustees of the University.

During the year 1953-54 Dr. Paul M. Pepper resigned from the OSURF staff to become Director of the Mapping and Charting Research Laboratory and was succeeded by Professor Karl M. Krill. Professor MacWood returned full time to the Chemistry Department and Professor Robert A. Oetjen of the Department of Physics and Astronomy became a half-time staff member of OSURF.

Dr. Cecil E. Boord, director of the American Petroleum Institute-supported project, retired from active teaching at the end of the year but continued to supervise the API project which dated back to the early days of the Foundation.

The year ending June 30, 1955 saw a drop of about 5.8 per cent in research support to \$3,656,578. Income from government sponsors was down \$181,000 and from non-government sponsors \$43,500, reflecting reductions in Federal spending in the post-Korean period. There were 175 projects active during the year, 132 of which were government sponsored and 43 non-government.

This was the year of the reorganization. For the first time since the establishment of the Foundation in 1936 there were modifications to its Articles of Incorporation and Code of Regulations which extensively modified the manner in which the Foundation was managed. For a summary of these changes we quote from the 19th Annual Report of the Foundation as follows:

*Reference was made in earlier reports to a committee appointed by President Bevis to review the Foundation's organization and relationships at the University. This committee completed its study and made certain recommendations to President Bevis in May 1954. The principal intent of these recommendations was to simplify the Foundation's structure by reducing the number of Members and constituting the Members as Directors also. At the same time the interlocking of the Foundation and the University would be made somewhat closer, and faculty representation on the governing body more direct. It was pointed out that such changes could be accomplished only by the Members, as amendments to the Foundation's Charter and Code of Regulations.*

*In view of the fact that the Foundation had been established initially at the instigation of the University Board of Trustees, it seemed appropriate that any changes proposed in its structure be first approved in principle by the Board. Such approval was given at the September 1954 meeting of the Board. Mr. Stanger, the Foundation's legal counsel, then prepared a draft of the amendments of the Foundation's Charter and Code of Regulations which would be required to accomplish the desired changes. This was reviewed by the Foundation's Board of Directors at a special meeting October 18, 1954. After suggesting certain minor changes in phraseology and substance, the Board of Directors moved that the draft amendments be referred to the Members with the recommendation that they be adopted. Final affirmative action thereon was taken by the Members at the Annual Meeting, November 4, 1954.*

Under the revised Charter, the purposes of the Foundation are stated to be: "to promote the educational objectives of the Ohio State University by encouraging, fostering, and conducting investigation and research in the physical, biological, and social sciences, the humanities, and all other branches of learning; instructing individuals in the methodology of investigation and research; and utilizing, publishing or otherwise making known the results of such investigation and research, all pursuant to such arrangements with the Ohio State University as the trustees of the corporation may deem appropriate."

The former Code of Regulations provided for a membership of approximately 55, in five classes, and a 15-member Board of Directors chosen by the Members. The Board, in turn, was required to elect new members as vacancies occurred. The revised Code reduces the number of members to 21 and constitutes the Members as the Directors also. These consist of one (1) Trustee Member, designated by the University Board of Trustees; five (5) Administration Members (based on the present organization of the University), namely the President, the Vice Presidents, and the Dean of the Graduate School of the University, *ex officio*; six (6) Faculty Members selected by the University Graduate Council; three (3) Alumni Members chosen by the Ohio State University Association; and six (6) National Councilor Members elected by the University Advisory Research Council.

To take care of the interim period between adoption of these changes and designation of the new Member-Directors, the Code provided that the Directors holding office at the time of the 1954 Annual Meeting should continue in office until the new Board was fully constituted. This was not accomplished until approximately the close of the fiscal year reported on herein.

No other major changes were made in the Foundation's structure. The officers of the Foundation continue as before, with the exception that provision was made for an Assistant Secretary. The Board of Directors was authorized by the revised Code to elect an Executive Committee from its membership, without specification of the composition of such a committee. At its meeting November 5, 1954, the then Board of Directors moved to create an Executive Committee of four members plus the President and Vice President of the Foundation and the President of the University, *ex officio*.

The most significant change in the reorganization was the elimination of the Industrial Councilor class of member and the sharp increase in proportional representation of the University administration. With the rapid emergence of government support of research in the post-war period

the relative importance of industrial support declined. The dropping of the industry representatives from the Foundation membership also resulted in a decline in the number of industries supporting University research through the Foundation.

An unheralded but important event precipitated by the reorganization was the termination of services of J. F. Lincoln and C. F. Kettering as members of the Foundation's Board of Directors. Both had contributed significantly to the establishment of OSURF and had served continuously on its Board since its inception.

The reorganization did not significantly modify the style of operation of the Foundation. However, the offices were moved in June, 1955 from the 19th Avenue location to the office building at the Research Center, 1314 Kinnear Road, with the result that the Foundation staff which had always been favored with a central campus location experienced serious transportation and communication problems. This geographic separation from the faculty and administration on the main campus created a disadvantageous situation which has continued to plague the Foundation since the move.

The factory building at the Research Center was studied by the University Architect to design space for 11 principal research laboratories. A segment of the building was remodelled to house the University Architect's Office. Outlying structures were planned to house experimental animals, chemical research, materials laboratory space, and other services.

The 20th year of the Foundation, ending June 30, 1956, saw the volume of research remain essentially static at \$3,926,192. There were 192 projects of which 147 were government sponsored and 45 were supported by

non-government sponsors. In the 20th year there were 836 research personnel appointed to Foundation projects, including 282 graduate students. Seventy per cent of all research projects provided research opportunities for graduate students and during the year 38 Ph.Ds and 32 Masters degrees were awarded to project personnel.

During 1955 John E. Spires became accounting supervisor for the Foundation, and Dr. Russell E. Hay, an agronomist, joined the staff replacing Professor Oetjen who accepted a Fulbright Fellowship in Japan. Frederick J. McCool became the new OSURF editor.

Two meetings of the OSURF Board of Directors were held during 1955-56 to effect the changes required by the reorganization of the previous year. At the fall meeting the composition of the Executive Committee was modified to bring it into line with the amended Code. The Committee now consisted of the President of the Foundation as Chairman, the Trustee Member of the Foundation, and one member each from the other four classes of Foundation Members.

At the business session of the spring meeting, the Board accepted, with minor changes, the recommendations of the Executive Committee that a class of Research Counselors of the University be created. This action was taken in collaboration with the University Advisory Research Council, which assisted the Foundation in developing the plan and recommended its adoption by the University. The objective was to multiply and strengthen the ties of the Foundation and the University with outside research agencies and personnel through individual contacts. It was hoped that the plan could be implemented during the ensuing year.



The spring meeting introduced an innovation in that the afternoon session was held jointly with the University Advisory Research Council. The consensus seemed to be that this was beneficial for all concerned in promoting mutual understanding. It appeared likely that similar sessions would be arranged for future meetings.

The new Antenna Laboratory facility was completed and occupied, with the costs of additional equipment and furnishings being met from an \$80,000 authorization by the OSURF Executive Committee. Funds in the amount of \$90,000 were also advanced by OSURF to improve the facilities of the Aeronautical Engineering Research Laboratory at Don Scott Field. North American Aviation, Inc., provided \$20,000 to assist the laboratory in obtaining much-needed data processing equipment.

A significant event of the year was the initial sponsor support from Air Force Cambridge Research Center for the radio astronomy program, under the direction of Professor John D. Kraus, using the radio telescope of unique design which he had built without sponsor assistance.

The volume of sponsored research administered through the Foundation in the year ending June 30, 1957 remained essentially static for the third year. The Foundation administered 210 research projects during the year, 149 of which were sponsored by government and 61 by industry and other non-government sponsors; sponsor support amounted to \$3,726,720.

A \$750,000 remodelling and construction project to adapt the newly acquired facilities at the Research Center to meet research project needs was started in the Spring of 1957. The renovated space was to house the Mapping and Charting Research Laboratory, Aviation Psychology, Comparative

and Physiological Psychology, Institute of Nutrition, Institute of Genetics, Physics, and Mechanical Engineering. An attached air-conditioned animal laboratory, a cryogenic laboratory, and storage for chemicals were also a part of the Research Center improvement package.

A brochure explaining the structure and operations of the Research Foundation was published in the Fall of 1956.

In his inaugural address on April 29, 1957, President Novice G. Fawcett stressed the importance of research to the development of the University. This emphasis was further underscored by his action in creating the Office of Vice President for Instruction and Research when the top level administration of the University was reorganized on September 1, 1957. The creation of this office provided a new and important point of coupling of the Research Foundation to the University.

## THE POST-SPUTNIK SURGE

Any historical review of the development of science and public support of science is likely to cite Sputnik as a milestone. In November 1957 the USSR orbited its first satellite, Sputnik I, and the U.S. accepted a challenge which resulted in unprecedented support of science and science education - the space race was on.

Two other milestone events in 1957-58 coincided with the launching of Sputnik. In his first year as the head of The Ohio State University President Fawcett brought new focus to research by naming Frederic W. Heimberger as Vice President for Instruction and Research. Also 1957-58 saw the University in the midst of a major expansion of physical facilities which would provide significant new capacity for sponsored research activities. Although the volume of research was slightly lower in fiscal year 1958 because of the general recession and cutbacks in government spending, there was evidence of a new optimism and confidence about the future.

The impact of these events on the growth of sponsored research at The Ohio State University can best be depicted graphically. Figures 1 and 2 show the rapid growth of sponsor support and the number of research projects beginning in 1958. Figure 3 shows the significant increase in the number of faculty members appointed to Research Foundation administered projects during the ensuing years. For purposes of comparison, the Autumn Quarter enrollment in the Graduate School of The Ohio State University is plotted in Figure 4.

In the year ending June 30, 1958 the Research Foundation reported sponsor support of \$3,876,915 for 216 active projects of which 51 were

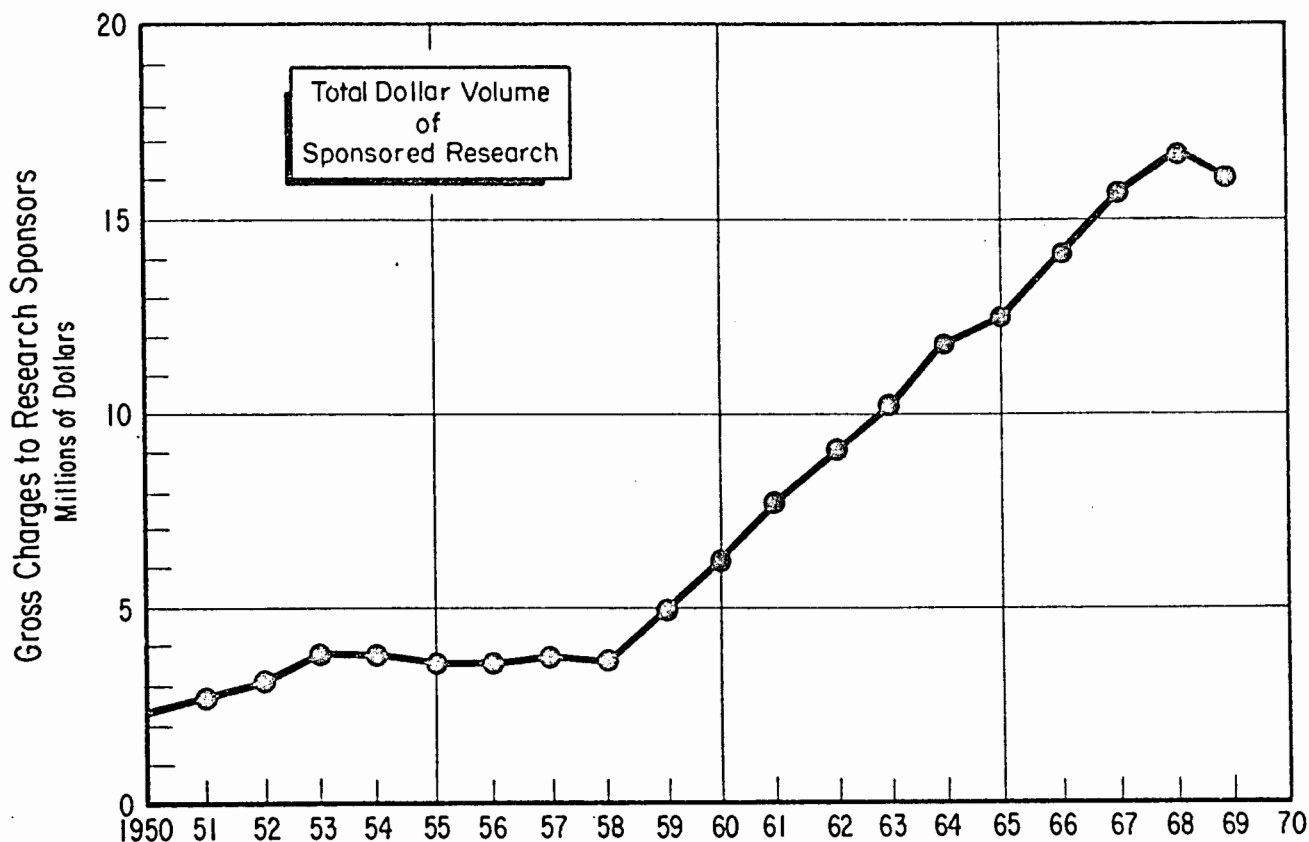


FIGURE 1 Graph showing total dollar volume of sponsor support for projects of the OSU Research Foundation by fiscal year for the period 1950-1968, inclusive.

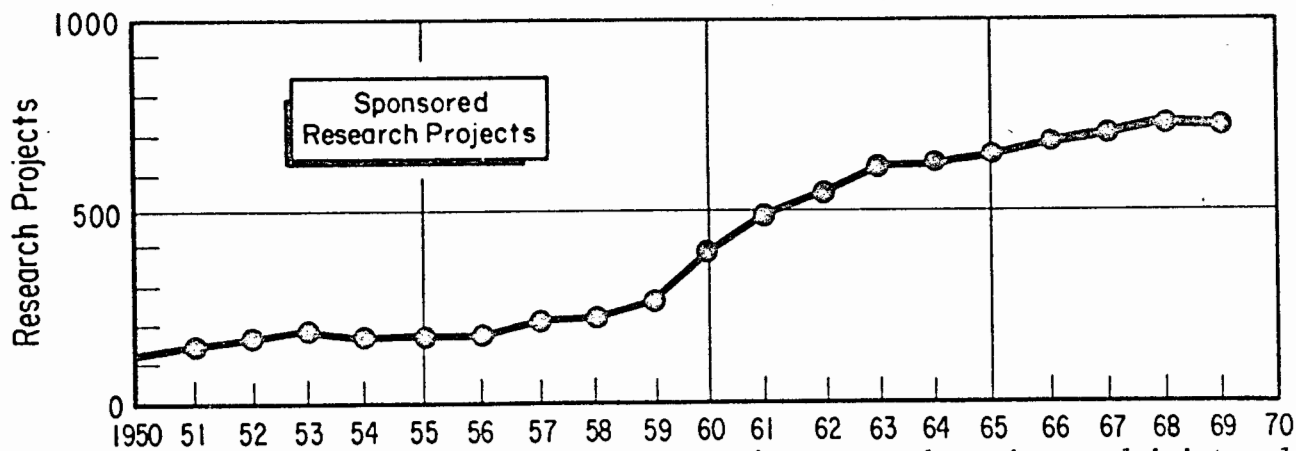


FIGURE 2 Graph showing number of active research projects administered by the OSU Research Foundation each year during the period 1950-1969, inclusive.

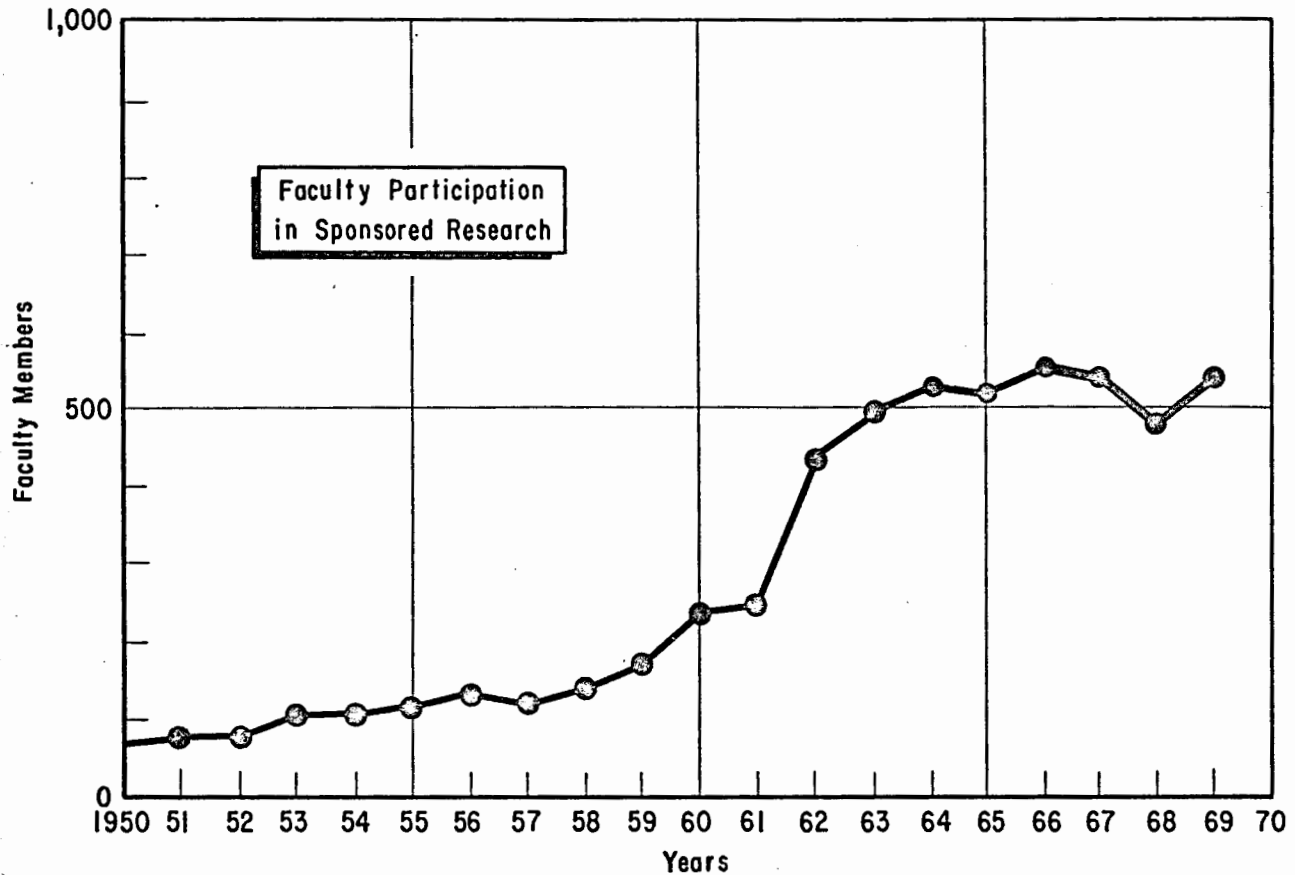


FIGURE 3 Graph showing number of Ohio State faculty members participating in sponsored research administered by the OSU Research Foundation in the years 1950-1969, inclusive.

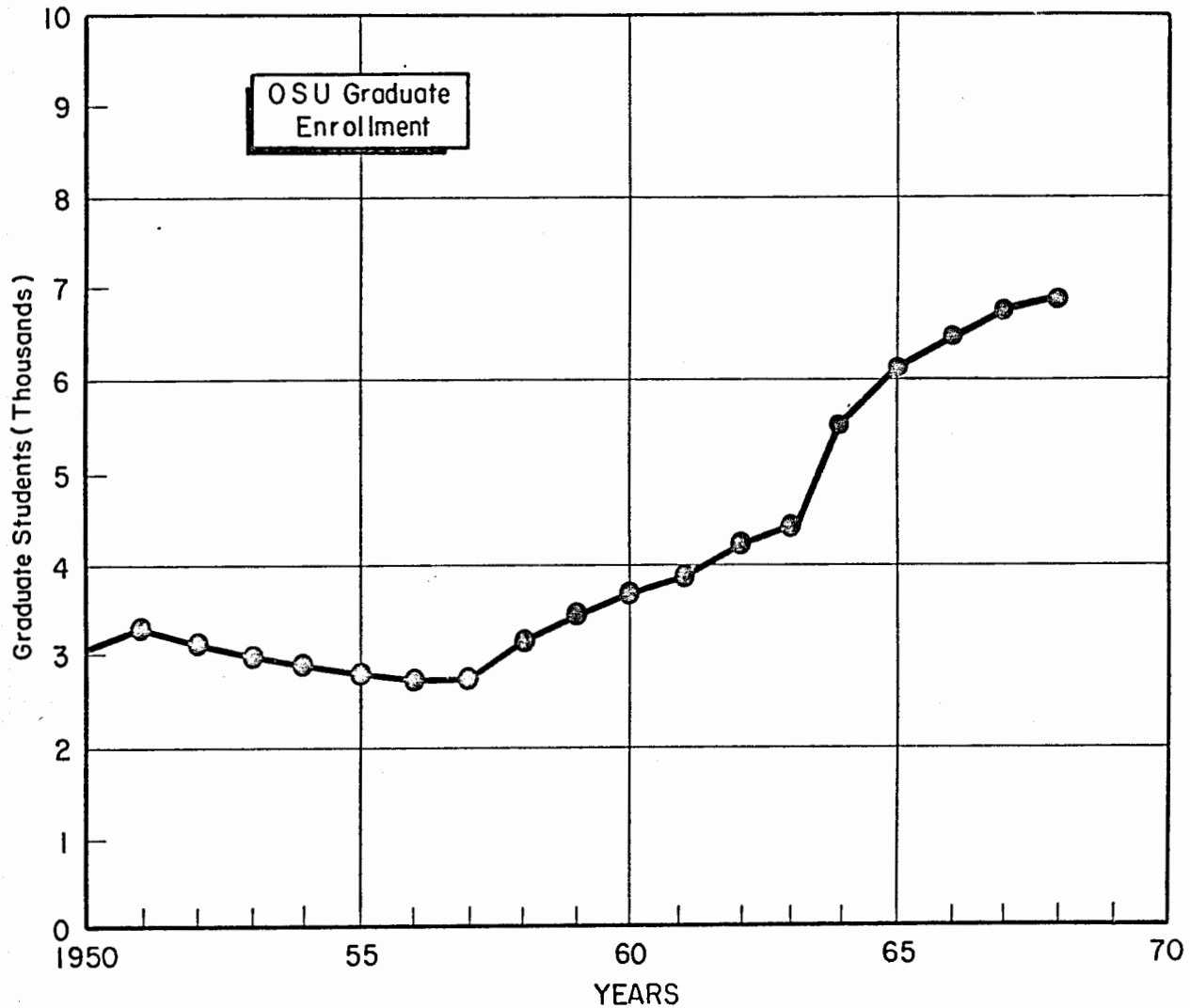


FIGURE 4 Graph showing the graduate enrollment at The Ohio State University as reported for the Fall Quarter for the years 1950-1968.

supported by non-government sponsors and 165 by Federal agencies. These projects were conducted by 31 departments of the University.

Several changes occurred with respect to officers and members of the Foundation during fiscal year 1958. Jacob B. Taylor resigned as Vice President of the University, thereby vacating his position ex officio as a member of the Foundation. He was also Treasurer of the Foundation. To succeed him in the latter position the Board elected Charley F. Miller, Comptroller of the University. Gordon B. Carson, who had been Dean of the College of Engineering, succeeded Mr. Taylor as Vice President of the University and likewise as an Administration Member of the Foundation. Bland L. Stradley, who had been Vice President of the University and a member of the Foundation for many years, passed away in August, 1957. By reason of a reorganization in President Fawcett's staff, there was no direct replacement for Mr. Stradley. The number of Administration Members of the Foundation was, therefore, reduced from five to four. Death terminated the services of another long-term servant of the University and Foundation when Carl E. Steeb died in May, 1958. The Board of Directors elected John T. Mount, Administrative Assistant to the President of the University and Secretary of its Board of Trustees, to succeed Mr. Steeb as Secretary of the Foundation. At the time of the annual election of officers in November, 1957, Dean Alpheus W. Smith, who had been President of the Research Foundation for many years, expressed the desire that he not be re-elected, whereupon the Board elected Frederic W. Heimberger, OSU Vice President for Instruction and Research, to succeed him. Dean Smith was subsequently selected by the University Advisory Research Council as a

National Councilor Member of the Foundation to fill out the unexpired term of Ralph J. Watkins, resigned, thus ensuring a continuation of Dean Smith's association with the Foundation. There were two newly elected National Councilor Members: Roland M. Bethke, Vice President in charge of Research, Development, and Technical Services, Ralston Purina Company; and William H. Charch, Research Director, Pioneering Research Division, E. I. du Pont de Nemours & Company. Dr. Charch died in July, 1958 having had an opportunity to attend only one of the Foundation's meetings. There was one change in the category of Faculty Members; Fred A. Hitchcock, Professor of Physiology, was elected to succeed Grant L. Stahly.

Completion of the first phase of construction and remodeling at the Research Center was accomplished about mid-year. By the close of the year several research programs had been moved to the new quarters; viz., those of the Mapping and Charting Research Laboratory, Aviation Psychology, Comparative and Physiological Psychology, Physics, and the Materials Laboratory. Activation of the Institute of Nutrition Laboratory was delayed principally by lack of equipment. Aviation Physiology required some additional remodeling and utilities beyond those provided by the first contractor before equipment could be set up and put into operation. The outlying Cryogenic Laboratory and storage buildings were occupied promptly, as was also the attached animal house.

As to the status of new and pending facilities, we quote from the Foundation's 22nd Annual Report, 1958, as follows:

*In general, the past several years have witnessed a significant improvement in the University's outlook as to physical facilities. Among major units recently completed, under construction, or scheduled for initiation soon, are: the Van de*



*Graaff Laboratory and Argonaut Reactor building at the Research Center; Agriculture, and Veterinary Medicine buildings on the West Campus; additional facilities at Don Scott Field; a large radiotelescope structure at Ohio Wesleyan University for the joint benefit of that institution and O.S.U.; and on the main campus a new wing for the Physics building, an addition to the Electrical Engineering building, buildings for Aeronautical Engineering, Chemical Engineering, and other Engineering Departments, additions to the College of Education and to the College of Arts and Sciences, a sizable addition to the College of Dentistry building, and a new Research Wing for the University Hospital. Dormitory accommodations for both men and women students have also been greatly increased and more units are planned. When these facilities are fully equipped and staffed, the University's capabilities in research, education, and service will have been very greatly strengthened.*

A noteworthy change in the senior staff of the Foundation took place early in 1957-58 when Dr. Karl E. Krill, who had been serving as one of the Assistants to the Director, transferred from OSURF to the University where he became assistant to Vice President Heimberger. His position was filled by Dr. Paul M. Pepper who returned to the Foundation after several years as Director of the Mapping and Charting Research Laboratory.

Several significant events of 1957-58 are singled out from among the many sponsored research activities because of their significance to the future. At a site adjacent to Perkins Observatory construction was begun on the first segment of a radio telescope of unique design having a fixed parabolic reflector 360 feet long by 70 feet high in conjunction with a tiltable flat reflector of the same length and 100 feet in width. The Geology Department of Ohio State was heavily involved in the Antarctic Program of the National Science Foundation carried on in connection with the International Geophysical Year. The IGY was a global program of study of the natural phenomena of the Earth and its environs in space which led to the space age and was the forerunner of the emerging emphasis

on the environmental science in the decade ahead. Also, in the area of aviation physiology, research was undertaken relating to man's ability to perform in space.

There was a sharp increase in the research activities administered through the Research Foundation in the year ending June 30, 1959. The volume of sponsored support increased from \$3.83-million in the previous year to an all-time high of \$5,145,235. The number of projects jumped from 216 to 264, with 207 sponsored by government and 57 by non-Federal sources. Sponsored research was conducted in 37 departments representing all of the ten colleges of the University except the College of Law.

Late in the fiscal year the University announced that the Foundation would administer for the University all research grants from the National Science Foundation and the National Institutes of Health. The University Business Office had previously monitored grants from these agencies because of technicalities relating to the recovery of indirect costs. Because of the Foundation's long experience in dealing with Federal agencies on contract research, this move consolidated responsibility for the University's Federally sponsored research to one administrative office. This change was advantageous to the research faculty, the University administration, and also to the sponsors. The Office of Business and Finance continued, however, to administer instructional and facilities grants from Federal agencies.

Professor C. H. Summerson, Department of Geology, joined the professional staff of the Foundation on a half-time basis in 1958-59.

The Board of Directors at its annual meeting in 1958 authorized a contingency fund with an annual ceiling of \$50,000 to meet various types

of operating contingencies associated with the growing volume of research.

In this year the new Van de Graaff accelerator facility was placed in use at the Research Center on the West Campus. The Operations Research Group with Public Health Service sponsorship moved into the first three years of a five-year program to develop a model of use by hospital managers and planners in evaluating the level of patient care provided by a hospital. Air pollution studies were conducted in the Department of Veterinary Pathology. An Institute of Research in Vision was established and Dr. H. Richard Blackwell came from the University of Michigan to serve as Director. In a joint program begun in 1955 the University, through OSURF, cooperated with the Air Force Institute of Technology to establish the School of Logistics at Wright-Patterson Air Force Base for research needs in the continuing education of military and civilian personnel. By 1959, the activity under the direction of Professor William R. Moeckel, Department of Business Organization, had grown to the point that it involved 50 Ohio State staff members working on contracts involving annual support of approximately \$1-million.

The year ending June 30, 1960, was the second in a period of unparalleled increases in the sponsored research activities administered through the Research Foundation. The volume reached \$6,448,315 and the number of active projects was 392, of which 312 were Federally sponsored and 80 were non-Federal. Forty-seven departments participated in the University's program administered by OSURF

With the establishment of the Numerical Computation Laboratory and the installation of an IBM 704 Computer at the laboratory facility in the Research Center, The Ohio State University joined the relatively small

group of universities which at that time had modern computing facilities. Dr. Roy F. Reeves, assisted by Dr. Theodore W. Hildebrandt, both of the Mathematics faculty, assumed responsibility for managing and developing the facility. This was an outstanding milestone for the University. The University's involvement with computers began in 1954 when the Research Foundation made available, for part-time University general academic purposes, a small computer rented for the Cryogenic Laboratory of the Chemistry Department in exchange for supervision of the facility by faculty members in the Department of Mathematics. Miss Mery L. Gong who was employed by the Foundation to work with this computing equipment is still associated with the University computer facility as an administrative assistant. In 1956 an IBM 650 was installed to serve the research and instructional needs of the University until the establishment of the Numerical Computation Laboratory and the acquisition of the IBM 704. For several years following the establishment of the Numerical Computation Laboratory, the Research Foundation contributed to support of the Laboratory through special budget appropriations.

Following the appointment of Dr. Ralph M. Johnson as Director in June, 1959, the Institute of Nutrition and Food Technology moved into newly equipped laboratories in the Research Center to mount an interdisciplinary research program in this area.

Vernon Ward transferred from the Aeronautical Engineering Laboratory to the staff of the Foundation in October, 1959 to serve as an assistant to the director.

Reporting to the Board of Directors at the 1960 Annual Meeting of the Research Foundation, Dr. Frederic W. Heimberger, President of the Foundation,

pointed out that the research activities administered by OSURF constituted the largest single fiscal item of the University's budget with the exception of the University's personal service budget and the rotary fund for patient care in the health center. Almost one dollar in eight of the \$53-million received and spent by the University in fiscal 1959-60, he noted, came through the Research Foundation. In reviewing the role of sponsored research at Ohio State, Dr. Heimberger said:

*Contract research on this campus might easily have drifted off into a kind of business operation selling facts to those who would buy but having little relationship to the fundamental purposes and functions of the University. This has not happened and, indeed, the whole drive has been to make the Foundation a powerful arm of the larger body rather than an entity in itself.*

The year ending June 30, 1961 marked a quarter of a century of service to The Ohio State University and its faculty by The Ohio State University Research Foundation. Over these years the Foundation had evolved into an organization much different from the industrial research development organization it was incorporated to be. With the growth of the University, the changing patterns of research support and the increasing complexity of university research management, it had become a specialized, sophisticated administrative unit built to serve the particular needs of the University and its faculty in seeking support for sponsored research and the administration of sponsored research programs.

In FY 1961 sponsors supplied \$7,626,484 for 469 projects active during the year, of which 375 were government sponsored and 94 were supported by industry and other non-government sponsors. Fifty departments contributed to these research activities.

At the Annual Meeting of the Board of Directors, April 21, 1967, an interim report was made by Graduate School Dean Everett Walters, Chairman of a committee appointed by Dr. Heimberger to make a thorough study of the function, organization and procedures of the Foundation, as well as its total relationship with the University. Members of this committee included: Carlton S. Dargusch, G. Preston Hoff, Robert A. Oetjen, Carroll L. Shartle, Alpheus W. Smith, G. E. Tenney, and Dean Walters, Chairman.

In 1953, acting in concert with the University, the Board of Directors of the Research Foundation agreed to transmit to the University quarterly recovered indirect costs accumulated in the Foundation's Overhead Reserve account after setting aside funds to meet its budgeted operating costs and authorized contingency expenditures. This policy was reviewed in a September 26, 1961 memorandum to the OSURF Board of Directors from Foundation President Frederic W. Heimberger, and certain modifications in the transfer procedure were reported by the Foundation to permit the crediting of these funds to a University Treasurer Research Account, from which the funds could be allocated at the discretion of the President for the support of research, special facilities, major projects, or other related University developments.

Early in 1962, the Research Foundation transferred to the University the property at Kenney and Kinnear Roads which had been purchased in 1961 from the Bituminous Research Institute by OSURF using accumulated Reserve Funds.

The year ending June 30, 1962, produced \$9,020,283 in sponsor support as compared to \$7,726,484 for the preceding year. There were 532 active projects conducted in 53 departments of the University with Federal

sponsorship for 418 and industrial and other non-Federal sponsors for 114. The total personnel appointed to Foundation projects reached a new high of 2166, of which 437 were faculty and 474 were research associates and senior staff members in addition to supporting staff. In 1961-62 the University conferred graduate degrees on 151 students appointed to Research Foundation projects, of which 64 were doctorates.

Executive Director Woolpert saluted the Foundation professional staff in the 26th Annual Report as follows:

*Role of  
The Administrator . . .*

*Our Annual Report last year recapitulated the Foundation's inception and growth over the span of its quarter century in being to that time. Now the records are being closed on the 26th year of operations. We may be gratified with the past but we should never be satisfied.*

*The prospects for research, despite the amazing accomplishments of recent years, appear as exciting as ever. By the same token, for those who only look over the shoulder of the research worker and endeavor to aid him in a less glamorous, administrative role, there will be no lack of opportunity to serve. Indeed, as research programs increase in size, complexity, and disciplinary scope, the need for the lowly administrator - lowly though he may remain - will likewise increase.*

*An organization is nothing without people, nor can it be much more than what its members represent, individually and collectively. Whatever the Foundation may have achieved, whatever its outlook for future service in the cause of research, principal credit must go to the senior staff pictured on the preceding pages, and to the loyal supporting staff who complete the roster.*

*Most of these individuals have been with the Foundation for many years, some from the early days in its development. In an operational sense these people are The Ohio State University Research Foundation. I take pleasure and pride in giving them "front billing" in this issue in modest recognition of their manifold contributions over the years.*

/s/ Oram C. Woolpert

Executive Director

During that year General Miles M. Dawson (USA ret.) succeeded General Carlos Brewer as security officer of the Foundation, and Jack R. Vincent, CPA, joined the accounting staff to undertake automation of the project accounting system.

The establishment of the Department of Geodetic Science in 1961 was a direct result of the growth and development of the Mapping and Charting Research Laboratory. The Institute of Geodesy, Photogrammetry and Cartography operated in conjunction with the MCRP from 1950 until that Laboratory was dissolved in 1959. The Institute of Geodetic Science, under the direction of Professor Weikko A. Heiskanen, became the interdisciplinary research arm of the newly formed Department of Geodetic Science. The 1962 Annual Report featured the systems research in Aviation Psychology under the direction of Professor George E. Briggs which was an on-going effort dating back to 1952. This program was important not only for its research accomplishments in the area of human information processing and decision making which provided an unusual opportunity in the training of graduate students, but also the program made sufficient demands on the Numerical Computation Laboratory that it contributed significantly to the up-grading of computer facilities.

The Institute of Polar Studies, organized in February, 1960 as an outgrowth of Ohio State participation in the IGY program of Antarctic research, continued to expand its interdisciplinary program of polar research with NSF support and significant support from the University's Mershon Center for Education in National Security. IPS Director Richard P. Goldthwait developed cooperative research activities involving the



departments of Geology, Botany and Plant Pathology, Geodetic Science, Geography, and Microbiology.

On June 29, 1962 Dr. Heimberger, acting on the wishes of the Board of Directors, reconstituted the Research Foundation Review Committee originally appointed in December, 1960 under the chairmanship of Dean Everett Walters, who had since left the campus. The new committee consisted of E. E. Dreese, G. Preston Hoff, Alpheus W. Smith, Delos D. Wickens, and G. E. Tenney, Chairman. This committee reported to a special meeting of the OSURF Board of Director on December 5, 1962. The committee made the following recommendations:

1. *Recommendations to the Research Foundation Board for their action:*

A. *ORGANIZATION*

a. *To meet the conditions ahead of us and the requirements of the R.F. services and operations, an Executive Director of proven research status and vigor should be selected to replace Dr. Woolpert on his retirement in 1963.*

b. *There should be clarification of the division of responsibility of the R.F. senior staff, with appropriate titles.*

*Ways should be considered to increase the degree of identification of the senior staff with the University faculty.*

c. *The expected increased activity requires that the R.F. staff be increased in size and distributed appropriately for the disciplines represented.*

B. *OPERATIONS*

a. *Both policy and viewpoint should be "loosened up," or liberalized regarding the R.F. "Special Facilities Reserve" and "Contingency Reserve."*

*To use the "Special Facilities Reserve," applications should be made directly to the R.F. on specific research needs, and the R.F. would clear with the designated University official in keeping with University facilities plans.*

The "Contingency Reserve" is not adequate to take care of needs properly. It should be increased, from \$50,000.00 to \$100,000.00, and the formula for replenishment should be revised to increase the rate of replenishment. The ideal arrangement would be to maintain \$100,000.00 on a monthly basis.

These changes would meet an increasing need to take care of requirements where quick action is essential in meeting situations in which the research program would suffer seriously in the absence of this action.

- b. This liberalizing of the R.F. "Contingency Reserve" should include the responsibility of paying for authorized faculty travel to promote, check up on or "sell" proposals which have been submitted, and "carrying" a broader range of graduate students between contracts, and taking care of such contracts themselves where circumstances justify.
- c. It is recommended that the R.F. establish a policy that encourages those research units large enough to maintain their own shop and other services to do so. Those research units not able to justify their needs alone should pool their resources and services. The pooling idea also has application within the larger units. The R.F. should implement this policy by encouraging and promoting it to the point, if necessary, of providing such facilities and necessary technicians for the use of University research personnel, the necessary accounting to be handled by the R.F. office. (Included in this category are drafting, illustrations, blue prints, charts, graphs, apparatus, glass blowing, and such.)
- d. In view of the present and potential size of the Research Foundation staff and those of the physically associated laboratories, it is recommended that the facilities at Kinnear Road be increased so as to supply:
  - 1) Increased office space
  - 2) Luncheon facilities (At present there are 350 regularly employed people at the Center.)
  - 3) Increased laboratory space or support facilities for the smaller research units funded to the R.F.
- e. There has been a weakness in the promptness and make-up of some financial and other reports the R.F. has prepared for research personnel. This is being corrected by the procurement of new equipment and other action.
- f. The R.F. should keep the Deans advised of arrangements with individuals within their college.

- g. *The R.F. should have a definite plan and program to make use of the R.F. Directors by drawing on their ability and background representing many years of diversified research experience. This would apply to policy and other decisions concerning research within the province of the R.F.*

C. *COMMUNICATIONS*

- a. *The R.F. should improve communications with the entire Faculty. It is obvious from our contacts that many of the Faculty do not know what the R.F. setup is or what it can do for them.*
  - b. *The R. F. should disseminate information on policy changes, accomplishments, and problems on a regular basis. A monthly publication is recommended. The "Science and Appliance" now published monthly (except July and August) by the R.F. could be expanded and adapted to serve this purpose.*
  - c. *There should be much closer liaison of R.F. staff with University investigators and research supervisors.*
  - d. *To acquire better understanding and develop the research program, it is recommended that the following conferences be held at appropriate times and with carefully prepared programs:*
    - 1) *Meetings of the R.F. staff for discussion of current problems and situations.*
    - 2) *Meetings of supervisors of projects and representatives of departments with R.F. staff for mutual exchange on problems, practices, and procedures.*
    - 3) *Have Industrial Conferences, with representatives from industry, to promote understanding of research possibilities, facilities, and abilities.*
    - 4) *Have conferences with representatives of Government agencies, Foundations, and agencies which have funds available for the support of research.*
2. *Recommendations to the R.F. Board, to present to the University President and Board of Trustees for action:*

*With the recent appointment of Dr. Alfred B. Garrett as full-time University Vice President for Research, and the*

new viewpoint on research, undoubtedly accelerated by an intense interest for research in the Middle West, the developments at the University will probably see most of the present problems taken care of. We do want to note the following recommendations:

- A. For greatest efficiency and to avoid duplication of effort, as well as competition, all sponsored research, training contracts, and grants should be contracted for, arranged, and administered by one central agency.
- B. There is need for greatly improved communications between:
  - University Administration and Faculty
  - University Administration and sponsors and prospective sponsors
  - University Administration and R.F. staff
- C. It is suggested that there should be better acquaintance and more contacts with Government and Foundation personnel sponsoring research and making grants.
- D. At least 10 to 15% of the net "Indirect Costs" the R.F. pays to the University should be automatically "plowed back" to research-originating departments and by a formula based on the department contribution to research and overhead. This should be "unencumbered money" to be used on research requirements as the Departments deem necessary.

To simplify the application of this policy, and to serve as an incentive, the departmental overhead receipts should total at least \$5,000.00 annually in order to qualify for this automatic return.
- E. The Vice President for Research should have clear-cut responsibility and authority for the proper administration of the Treasurer Research Account and the apportionment between the six sub-accounts. The R.F. should be consulted on this apportionment, and from time to time the R.F. should be expected to make specific recommendations for disbursements from these accounts.
- F. Every effort should be made to get the Legislature to appropriate money for research adequate to meet the vital research needs.
- G. To improve 'communications,' and promote understanding, it is recommended that the University Administration arrange Conferences at warranted intervals for interested Faculty members and other research workers. These for

*the purpose of discussions on research, particularly concerning areas which are of interest to the University but not yet active. These might even involve research facilities.*

In October, 1962 Dr. A. B. Garrett, Chairman of the Department of Chemistry, was named to the newly created University post of Vice President for Research resulting from the split-off of research from the Office of Instruction and Research. Dr. Garrett replaced Vice President Heimberger as President of the Research Foundation.

In FY 1963 the Research Foundation administered 606 research projects supported by sponsors at a level of \$10,295,448. There were 476 government sponsored projects and 130 projects supported by industry and non-government sponsors. Sixty departments, bureaus, and institutes of the University took part in the sponsored research activities. During the year graduate students employed on Foundation projects earned 167 advanced degrees - 96 doctorates and 71 masters.

At the close of the Foundation's 27th year, Dr. Oram C. Woolpert retired as Executive Director, having served nearly 12 years. At the Annual Meeting on April 19, 1963 the following resolution was adopted by the Board of Directors:

*Resolved that this Board express its most sincere appreciation and profound gratitude to Dr. Oram C. Woolpert for his dedicated leadership as Executive Director of The Ohio State University Research Foundation.*

*The success of an organization such as this depends in large measure upon the competent and unselfish service of the Executive Director, on his understanding of the nature of a university, upon his appreciation of the crucial role of research in all areas of concern, and, perhaps, above all, upon his capacity to make intelligent day-by-day decisions consistent with and contributory to the long range objectives of The Ohio State University. Dr. Woolpert has done all this and more.*

*Because of his own experience in research, teaching, and administration, he brought to this office the technical competence necessary for the recognition and appreciation of provocative ideas, the sympathetic understanding of human nature so essential for productive cooperation and, above all, the vision and wisdom so necessary for effective leadership.*

*We deeply regret his leaving and wish him well.*

Writing shortly before his retirement in a paper entitled *A New Look at The Ohio State University Research Foundation*, Dr. Woolpert made the following observations:

*On reflection, it will be seen then that the Foundation has operated in some respects as a separate corporation and in other respects as an agency integral with the University. The University on its part has taken advantage of this duality. The University as a State agency cannot consummate contracts, make purchases, handle patents, arrange travel, accumulate and expend from reserves with the facility of a separate corporation. But other activities of the Research Foundation are carried out through the Foundation as a convenience to the University and in the interests of efficiency and economy which centralization affords.*

*If O.S.U. were a private institution rather than a State agency, or if it were operating under widely different State Statutes, many of the advantages of using a legally separate Foundation for the administration of sponsored research might not obtain.*

At the close of FY 1963 Frederick J. McCool, editor, left to accept a position at the University of Pittsburgh; Dr. Winston L. Hole left to accept a teaching position at Vassar College; and Roland J. Stanger, of the College of Law, who had served the Foundation since the period of the 1954 reorganization, concluded his tour of duty as legal advisor to OSURF.

A selection committee consisting of Graduate School Acting Dean Richard Armitage, Professor E. E. Dreese and Delos Wickens, and Messrs. Gerald E. Tenney and George R. Gehrkins was named by OSURF President Garrett to recommend a successor to retiring Executive Director Woolpert. The committee

recommended Dr. Robert C. Stephenson, Executive Director of the American Geological Institute, for the post in April, 1963. His appointment was approved by the Board of Trustees of the University on May 17, 1963, and he became the fifth executive director of the Research Foundation on September 1, 1963.

## A PERIOD OF GROWTH AND CHANGE

The period beginning with July, 1963, and continuing to the advent of the University's Centennial Year was one of growth and realignment of the Research Foundation.

The table below summarizes statistics relative to sponsored research administered through the Research Foundation from Fiscal Year 1964 through Fiscal Year 1969.

	<u>FY1964</u>	<u>FY1965</u>	<u>FY1966</u>	<u>FY1967</u>	<u>FY1968</u>	<u>FY1969</u>
Sponsor supported research expenditures	\$11.93	\$12.56	\$14.23	\$15.72	\$16.78	\$16.14
	<hr/> millions <hr/>					
Number of RF projects	629	646	686	717	734	732
Faculty appointed to RF projects	526	519	556	538	483	539
Graduate students appointed to RF projects	614	815	845	854	827	751
Number of proposals submitted	N/A	N/A	625	629	619	637
New grants and contracts approved by OSU	428	390	491	461	430	426
Amount of new grants and contracts approved	\$13.84	\$15.91	\$17.1	\$17.3	\$16.7	\$16.54
	<hr/> millions <hr/>					

Two accompanying graphs for Fiscal Year 1969 give some perspective as to the sources of funds for sponsored research and the distribution of sponsored research activities within the University. Figure 5 shows graphically the distribution of research support by sponsoring agency in



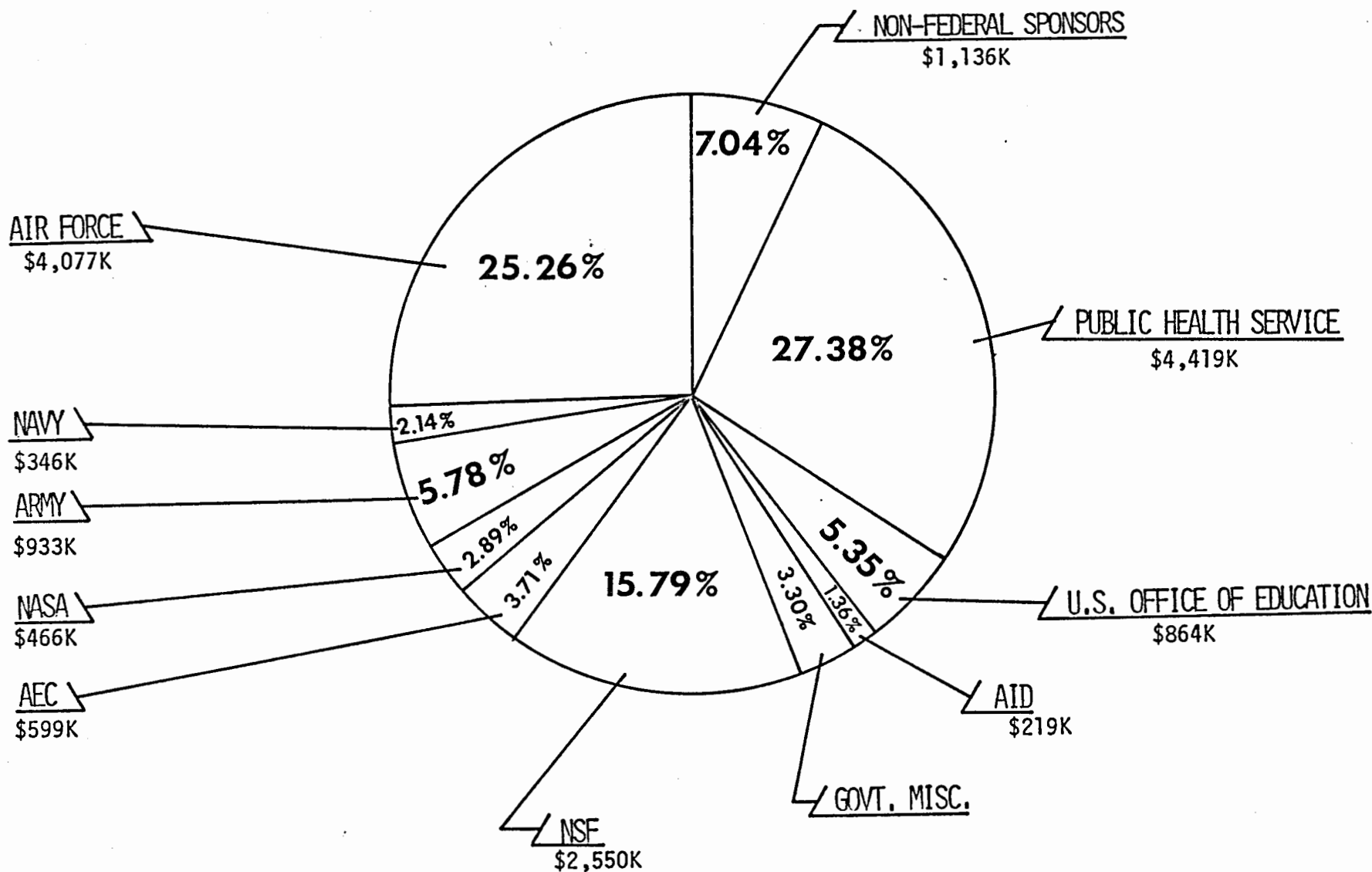


FIGURE 5 A graph showing the sources of support for sponsored programs administered by the OSU Research Foundation by type of sponsor and amount for FY 1969, ending June 30, 1969.

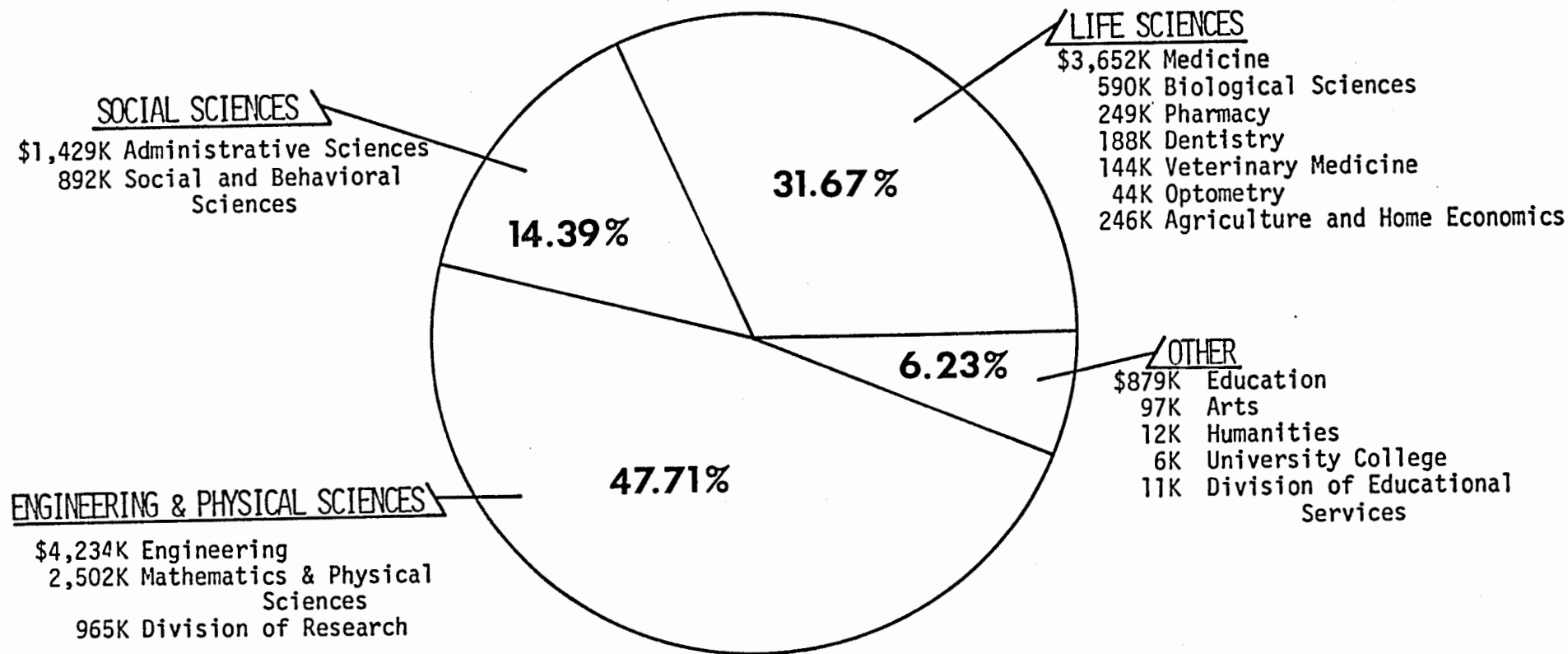


FIGURE 6 Summary of sponsored research expenditures by college on OSU Research Foundation projects in FY 1969, ending June 30, 1969.

FY 1969. Figure 6 shows the distribution of research expenditures in FY 1969 by college.

The volume of sponsor support, which rose from \$10.30-million in Fiscal Year 1963 to \$11.93-Million in Fiscal Year 1964, continued on an upward trend until Fiscal Year 1969 when the impact of the Vietnam War on government spending resulted in severe cutbacks in various Federal programs but particularly in support of university research. Beginning during the Johnson Administration and continuing into the Nixon Administration, there was increasing concern over the rapidly growing national budget. There was an increasing amount of conflict between Executive and Legislative branches of the government as to where and how economies should be effected. Late in Fiscal Year 1967 there was evidence that support of university research was beginning to decline. However, it was the conflict between President Johnson and members of Congress over the income surtax and related economics in demands for cutbacks in Federal spending for FY 1970 which led to a statutory limitation on expenditures for all Federal agencies, which in turn brought on sharp budget reductions for support of university research. The Public Health Service, Atomic Energy Commission, Department of Defense, as well as other agencies providing grant and contract support for university research, cut back significantly on the level of support for continuing projects and reduced the number of "new starts" funded. The National Science Foundation, which had fared poorly in Congress and was further crippled by the expenditure limitation imposed, elected to pass these cutbacks along to the universities in the form of institutional expenditure ceilings. Ohio State's cutback on NSF programs was in excess of 30 per

cent. The burden of adjusting to these cutbacks posed serious monetary problems for the University and consumed endless hours of administrative time in the University and the Research Foundation in efforts to establish expenditure ceilings and special procedures for monitoring expenditures for all NSF projects affected. The Federal support prospects for Fiscal Year 1970 showed little, if any, improvement over the previous year because of the continuing Vietnam conflict and mounting domestic pressures. As a result of these national conditions the growth rate for support of projects administered through the Research Foundation was uncertain for the immediate future.

Inasmuch as Federal sponsors evolved in the post-Sputnik era to provide more than 90 per cent of the support for sponsored research at Ohio State, analyses of trends in Federal concepts and practices became increasingly important to the Research Foundation. Some of the more important recent trends are worthy of note. Growth of support for some traditional areas of basic research in the sciences began to taper off with the approach of the Seventies. Research funds available to mission-oriented Federal agencies concerned with problems of urbanization, quality of environment (water pollution, air pollution), transportation, marine sciences, space, etc. offered new opportunities for universities to participate in research efforts focused on the mission of the agency. There was growing support for larger on-going, programmatic or thematic research programs in which scholars from various disciplines worked together on research problems relating to a central theme. There was growing Congressional pressure to focus attention on the technical

applications of research, with more emphasis on the technological and social science implications. For some lines of research, such as high energy physics, oceanography, and optical and radio astronomy, the facilities had become too sophisticated and too expensive for a single university to develop and maintain a program on its own, so that interinstitutional programs increased significantly. Ohio State's participation in programs of the Argonne National Laboratory and the Kitt Peak Observatory were examples of such cooperative participation. The trend in the mission-oriented Federal agencies to build in-house laboratories introduced a growing element of competition for the Federal research dollar, which in many instances had an adverse influence on the continuity and level of support for university research.

The increased volume of Federally sponsored research in the period 1963-69 brought many new problems of compliance with Federal rules and regulations, some of which are particularly noteworthy.

The Research Foundation worked with representatives of the University Business Office in the development of indirect cost studies and in the negotiation of indirect cost rates covering Federal research grants and contracts. The Foundation was an advocate of consistent indirect cost policies covering all types of extramurally funded programs of the University as a means of maximizing resources available to the University. Mr. Davis took an active part as a member of the Committee on Governmental Relations in the formulation of uniform costing principles included in the Federal Bureau of the Budget Circular A21, *Principles for Determining Costs Applicable to Research and Development under Grants and Contracts with Educational Institutions*.

In December, 1967, OSURF sponsored a four-day "*Cost Allowability and Overhead Negotiation Workshop*" for key University and Research Foundation personnel. The workshop was conducted by OSU staff members of the Defense Management Center associated with the Air Force School of Systems and Logistics at Wright Patterson Air Force Base. The Foundation has also participated in several interuniversity ad hoc conferences on indirect cost problems.

In late 1965 and early 1966 the Research Foundation was required to devote a great deal of time to the study of new cost-sharing regulations imposed by the Federal Bureau of the Budget as a result of Congressional action. These new regulations were to apply on research grant funds beginning March 1, 1966. The cost-sharing issue was reviewed for the Administrative Council of the University in December, 1965, and subsequently presentations on cost-sharing compliance were made before the Executive Committees of the Colleges and/or faculty groups in all colleges of the University. The presentation stressed the need for the preparation of full-cost budgets for all research proposals as a guide to departments in allocating departmental resources in support of research and in determining the level of cost participation. On February 16, 1966, the Administrative Council adopted *Directives on Authorization to Seek Off-Campus Research Funds*. On March 1, 1966, a new research proposal authorization form stipulated by the directives was adopted. New faculty time reports were adopted to meet cost-participation requirements. The project accounting system was reprogrammed to provide computer-produced cost-participation records.

As of April 1, 1968, the Research Foundation entered the institutional Prior Approval Program of the Public Health Service. Under this program participating institutions are given the authority by PHS to make certain kinds of decisions concerning modification of approved expenditures for research projects that normally would require referral to PHS for approval. OSURF proposed a control system for decision-making with the Prior Approval Program and was accepted in the Program by PHS. Obvious benefits to faculty researchers have resulted from the flexibility and promptness with which these decisions can be made within the institution.

Student unrest and campus riots became a matter of such grave concern to Congress in 1969 that some form of anti-riot clause, which had first been incorporated in the HEW appropriation bill in FY 1969, seemed likely to be made a part of most appropriations legislation for FY 1970 providing funds for University programs.

In the early Sixties the financial requirements associated with administering the rapidly increasing volume of sponsored research and the number of active projects began to swamp the Foundation's accounting system. Based on a feasibility study by Jack R. Vincent, who joined the staff in September, 1961, the Foundation embarked in 1962 on a program to computerize its fiscal system. The first computer-generated project financial statements were distributed to project supervisors in October, 1964 as a result of the new system for handling the general ledger and cost accounting. The system was modified extensively in 1966 to handle requirements imposed by mandatory cost-sharing on Federal grants.

Time lost in program conversion from the IBM 1401 computer to the IBM 1410 computer in the Numerical Computation Laboratory, and subsequently

in the extensive program conversion to the University's IBM 360 administrative computer resulted in serious delay in plans to implement other facets of the Foundation's record-keeping and management information systems. At the close of Fiscal Year 1969, however, the major task of systematizing project appointments and payroll distribution functions was undergoing tests on the computer prior to implementation.

Beginning in August, 1964, a new periodical, *OSU Research Review*, edited by Chester E. Ball, replaced *Science and Appliance* which had been published by OSURF since January, 1940. This new bulletin was created to acquaint faculty, administrators, and the general public with a wide range of University research programs through feature stories and news notes. Also listed in each issue were new projects, renewals, and extensions of programs which had been approved by the OSU Board of Trustees for administration through the Research Foundation.

To enumerate the many new faculty research activities administered through the Research Foundation in the period 1964-69 would add many pages to this history. The reader interested in gaining insight into the scope and depth of the expanding program of research is referred to the 28th through the 33rd Annual Reports of the Research Foundation and the information bulletin, *OSU Research Review*. In its five-year history, the *OSU Research Review* has described a broad cross section of University research in some detail.

Some sponsored programs which came into prominence during the 1964-1969 period are worthy of mention because they illustrate trends in research interests and support. A notable example of an interdisciplinary programmatic research effort is the large "Biology of the Heart" program project grant



funded by the National Institutes of Health and involving the cooperative efforts of researchers in the Colleges of Medicine and Veterinary Medicine.

A similar interdisciplinary effort is taking place in the newly developing field of biomedical engineering.

The Industrial Arts Curriculum Project of the College of Education and the project for the Improvement of Teaching Art Appreciation in Secondary Schools are examples of U.S. Office of Education-sponsored curriculum development programs bringing innovation and change to the educational scene. A highlight of Fiscal Year 1967 was the fact that Ohio State received four research program awards and two fellowships in the first round of awards by the new National Endowment for the Humanities. The Departments of Electrical Engineering, Geodetic Science, Physics, and Geology were involved in mission-oriented research programs related to the space program.

Staff members of the Research Foundation took an active role in planning and development of various new and expanding programs. Dr. Stephenson, with cooperation of representatives of Chemical Abstracts Service, Battelle Memorial Institute, and groups of interested faculty members, undertook the initial planning which subsequently lead to the creation of the Information Sciences Program. Mr. Higgs had a large share in developing the proposal which led to NSF funding of the new program that was merged with the new computer sciences program to form the Department of Computer and Information Science in 1967. Contributions were also made to the plans relating to the Center for Medieval and Renaissance Studies and to possible new program activities in urban affairs and crime and delinquency. The Foundation took an active role in encouraging broadened

faculty interests in the environmental sciences by encouraging program activities in atmospheric sciences, air pollution, water pollution, Lake Erie studies, and the application of systems analysis to environmental problems. In October, 1968 the Foundation sponsored a two-day Lake Erie Research Orientation Conference which featured an aerial field trip of the Western Basin of Lake Erie and discussion sessions at Stone Laboratory on Lake Erie research problems. An interdisciplinary group of approximately 40 faculty members, mainly from the biological and physical sciences and engineering, was invited to participate. The program resulted in new faculty appreciation of and interest in Lake Erie problems.

In 1968-69 Foundation staff members were being requested by the University administration to become directly involved in planning activities leading to proposals competing for institutional awards. The Life Sciences Section staff was involved in preparation of institutional proposals for a Health Science Advancement to be submitted to NIH and a University Science Development Award to NSF.

During the year 1968-69 the Foundation assigned Mrs. Renee Petersen, a new staff member, to developing a centralized file on private foundations with a record of supporting project research in universities. This information on private foundations became available not only to faculty members working to seek sponsorship for specific programs through OSURF but also to the entire University community as an aid in seeking Foundation gifts and grants. A Central Reference File System was being implemented with the advent of Fiscal Year 1970 to systematize the handling of internal information, particularly for the benefit of the Program Development Assistance

Division in their efforts to aid faculty members in research program planning and proposal submission.

In the six-year period 1963-69 the Foundation became more active in the affairs of organizations and ad hoc groups concerned with improvement of research administration policies and practices, particularly as they relate to University-Federal relations. Executive Director Stephenson served as a member of the Committee on Governmental Relations (COGR) of the National Association of College and University Business Officers (NACUBO), 1969-72; Committee on Sponsored Programs of the American Council on Education, 1968-70; the Engineering College Research Council (ECRC) Committee on Research Relations with the Federal Government, 1968-70; and the Conference Committee of the National Conference on the Administration of Research (NCAR), 1969-70. Members of the staff were also active in the National Council of University Research Administrators.

At the urging of executives in other university research foundations, Dr. Stephenson organized an invitational meeting of university research foundations and institutes in March, 1967 to discuss problems of research administration peculiar to these organizations. Florida Atlantic University served as host for the meeting and the following organizations participated: University of Denver Research Institute, Florida Atlantic University, Georgia Institute of Technology, Indiana University Research Foundation, University of Kansas Center for Research, Inc., University of Kentucky Research Foundation, University of Oklahoma Research Institute, The Ohio State University Research Foundation, Purdue Research Foundation, and Texas A&M Research Foundation. Subsequent meetings, which were hosted by the

Texas A&M Research Foundation (Galveston 1968) and the San Diego State College Research Foundation (San Diego 1969), included the Research Foundation of the State of New York representing the Universities in the SUNY system and representatives of the California State System, principally San Diego State College. On several occasions representatives of this ad hoc group represented, informally, the separately incorporated college and university research foundations and institutes on policy matters at the Federal level. One very important feature of the first meeting of the Foundations was the preparation of a booklet by each participant summarizing background information of organization and operations of their organization. Exchange of these booklets among the participating organizations provided much useful information and the basis for much comparative discussion.

In January, 1967 the Foundation took the initiative to arrange a special meeting of five major institutions (OSU, Michigan, University of Pennsylvania, Stanford, and New York Medical College) with HEW for discussions leading to a clarification of understanding with respect to their proposed PHS Institutional Cost-Sharing Agreement. The University, in concert with the Research Foundation, subsequently proposed an agreement which was accepted by PHS. This agreement greatly reduced the complications of meeting cost-sharing requirements by bringing all PHS cost-sharing grants under one blanket agreement which permits the averaging of participation costs.

Thomas E. Davis, Associate Director, who joined the OSU Research Foundation administrative staff in 1940, retired in January, 1967, having served OSURF throughout 26 years of its 30-year existence. He had

previously served as assistant project director on the Wartime Navy-Sponsored Recognition Training Program. His intimate knowledge of the University, the Foundation, and sponsoring agencies developed over long years of service, coupled with his perceptive administrative abilities and energy, earned for him deep respect of faculty, administrators, and fellow staff members. His administrative abilities were supported by a tough-mindedness when it was called for and by a pervasive wit and dedication to service of the University and its faculty. The dependence of Mr. Davis, which had developed in the Foundation over the years, dictated a thorough reorganization of the job responsibilities and style of operation to fill the tremendous void created by his retirement.

Mr. Davis was active in the major national organizations concerned with university research administration. He served on the Committee on Federal Relations of the Engineering College Research Council (ECRC) 1952-61. He was also a member of the important Committee on Governmental Relations (COGR) of the National Association of College and University Business Officers (NACUBO) from 1962 through 1966. This Committee, comprised primarily of representatives of the top universities, has worked in close liaison with Federal agencies on their administrative policies and procedures affecting support program for higher education. Mr. Davis was in continuous contact with his counterparts in other major institutions on matters of common concern.

Over the years a number of universities sought the counsel of Mr. Davis on matters relating to the organization, functions, and benefits of separately incorporated research foundations created to serve the

university. Notable among these were Florida State University and Colorado State University.

At the Summer Commencement, September 1, 1967, Mr. Davis was honored with the University's distinguished service award carrying the following citation:

THOMAS E. DAVIS

*THE OHIO STATE UNIVERSITY DISTINGUISHED SERVICE AWARD*

*Pioneer research administrator and dedicated University citizen*

*Thomas E. Davis, a 1939 graduate of the College of Commerce and Administration, served the University for 28 years. Mr. Davis played increasingly important roles in The Ohio State University Research Foundation, from his initial appointment as an assistant project supervisor to his retirement in 1967 from the position of associate executive director.*

*As a key administrator in the Research Foundation, Mr. Davis insisted that the activities directed by the Foundation be in harmony with the mission of the University. His major effort was to insure that research activities were an integral part of the University educational program, and he vigorously resisted all pressures which might have caused separation between the Foundation and the University. Largely through his vigilance, sponsored research at Ohio State has been administered as a part of the University rather than as a separate activity.*

*Mr. Davis was also active in the development of federal and industrial policies and procedures in support of sponsored research activities in universities. His counsel was widely sought by colleagues from other universities as well as by representatives of government and of industry.*

*A skillful administrator who displayed great loyalty to his colleagues and earned their loyalty in return, Thomas E. Davis rendered distinguished service to his alma mater, to the State of Ohio, and to the research efforts of the Nation.*

Two long-time and loyal employees of the Research Foundation retired in 1969. Patricia Slatzer, who joined OSURF in December, 1940, as a secretary to the director was associated with accounting, payroll, and

related activities throughout most of her 28 years with the Foundation. Many project personnel remember her for her handling of travel arrangements. Miss Slatzer retired in January, 1969. In June, 1969, Ernest D. Carter retired after 23 years of service as Purchasing Agent. He was responsible for keeping purchasing and property control procedures abreast of the changing requirements of the growing sponsored research programs of the University within the complex bureaucratic policies, regulations, and procedures of the various Federal agencies. Earlier, in 1966, Dr. G. Horace MacFadden, who for a number of years was employed on OSURF projects in chemistry, retired after nearly three years of service on the Foundation staff as an Administrative Assistant in the area of project administration.

The impending retirement of Thomas E. Davis, Associate Director, posed significant problems of realignment for the Foundation staff. The Board of Directors endorsed the recommendation of Executive Director Stephenson that a management study of the Research Foundation be undertaken. In planning the study it was recognized that there was much similarity between the integrated management of sponsored research projects afforded by the Research Foundation and the systems/project approach to management employed so successfully in the development of modern weapons systems. Furthermore, it was observed that there is a trend among most research-supporting sectors of the Federal Government to adopt systems management concepts and planning program budgeting. It appeared wise to view the Research Foundation with respect to these trends inasmuch as most research support comes from Federal sources. It seemed logical to turn to one of the management specialists in The Ohio State University Defense Management Center at Wright-Patterson

Air Force Base. Mr. Bert L. Hansen, Associate Director of DMC and Head of the Defense Weapons System Department, was selected as consultant to the Foundation, but in July, 1966 he became Director of the Office of Institutional Research and Special Assistant to the President of the University of Toronto. In June, 1966 Mr. Hansen, assisted by Mr. Alec Fletcher, DMC, began the study which was completed in December, 1966. He presented his report and a summary of his findings and recommendations to the OSURF Executive Committee on January 13, 1967.

The following excerpts from the Hansen report are significant:

*The prime objective of the study was to provide guidance for development of The Ohio State University Research Foundation into the most effective organization possible for the management of research grants, contracts, and sponsored research-related activities of the University.*

*The broad objectives of the study were to investigate and report on the feasibility of applying systems/project management concepts to research contracted through the Ohio State University Research Foundation and to recommend measures which would enable the Foundation to maintain maximum effectiveness in the administration of sponsored research and related activities.*

*We decided to approach the study with the positive hypothesis that the Ohio State University Research Foundation could be considered as the integrating sub-system of a research system composed of it, the Sponsors, Ohio State University administration and the Faculty.*

*Systems management and project management, which we collect hereafter under the term Systems/Project Management, has had an undeniable record of success in the management of weapon systems development by the Department of Defense. Prior to application of this management concept, functional arms of the services designed, developed, and built sub-systems of weapon systems without proper regard for how these sub-systems would integrate within the total system.*

*Data were collected by questionnaire and personal interviews. All Foundation personnel completed questionnaires and all available Foundation professional personnel participated in follow-up interviews. Selected faculty completed questionnaires and a*



*representative sample of faculty participated in follow-up interviews.*

*Completed questionnaires, transcripts of interviews, project flow networks, and other supporting information were subjected to detailed study by the consultants. The study resulted in recommendations on the role of the Research Foundation in research management, organization of the Foundation to support this role, and how the Foundation would operate within the total research system.*

*Broad recommendations are that (1) the role of the Foundation should shift substantially from heavy emphasis on Administrative service to greater emphasis on program development, (2) reorganization of the Foundation along project management lines is necessary to properly fulfill this role, and (3) there are measures which may be taken that will improve the operation of the research system.*

The Hansen report served as a basis for the initial reorganization of the structure and internal functions that became effective in February, 1967 following the retirement of Mr. Davis. Basically the operations of the Foundation were split into two functional units, the Program Development Assistant Division and the Sponsored Project Services Division headed respectively by Louis D. Higgs and Raymond S. Bugno. Messrs. Higgs and Bugno were also given the title of Deputy Executive Director. Fundamentally, the reorganization regrouped administrative functions to exploit the various capabilities of the professional staff to provide more effective service to the University and the faculty in the area of program planning, and to further systematize the administrative monitoring of research projects.

After one year of experience with the initial reorganized structure, it was considered necessary to make several adjustments. A staff position, Assistant to the Executive Director, concerned with internal budget and control and with systems problems, was created. Also, responsibility for monitoring research projects was centered in a newly created Project

Administration Section within the renamed Administration and Services Division. These changes were incorporated in the accompanying organizational chart, Figure 7, which was adopted February 1, 1968. A brochure describing The Ohio State University Research Foundation, its organization, and functions was published in March, 1968, to acquaint faculty and administrative personnel of the University with the reorganized Foundation. The professional staff associated with the Research Foundation at the beginning of FY 1970 are listed by office, name, and title.

#### OFFICE OF THE EXECUTIVE DIRECTOR

*Robert C. Stephenson, Executive Director*  
*Louis D. Higgs, Deputy Executive Director*  
*Raymond S. Bugno, Deputy Executive Director*  
*Mary E. Murphy, Administrative Secretary*

#### OFFICE OF ASSISTANT TO EXECUTIVE DIRECTOR

*Jack R. Vincent, Assistant to the Executive Director*  
*David L. Frase, Administrative Systems Analyst*

#### PROGRAM DEVELOPMENT ASSISTANCE DIVISION

*Louis D. Higgs, Director*  
*Douglass K. Hawes, Assistant to the Director*  
*Robert J. Lowry, Staff Assistant*

#### Engineering and Physical Sciences Section

*William J. Gealy, Associate Director*  
*Paul M. Pepper, Associate Director*  
*McIver W. Woody, Associate Director*

#### Life Sciences Section

*Thomas J. Curtin, Associate Director*  
*Kenneth W. Sloan, Associate Director*

#### Social Sciences, Arts, and Humanities Section

*Mrs. Renee Petersen, Assistant Director*  
*Richard L. Wright, Associate Director*

ADMINISTRATION AND SERVICES DIVISION

*Raymond S. Bugno, Director*

*Gerald Portugal, Assistant to the Director*

Project Administration Section

*Miles M. Dawson, Associate Director*

*Leo F. Schwerin, Associate Director*

*Lester L. Stout, Associate Director*

*Vernon G. Ward, Associate Director*

*Richard H. Hill, Assistant Director*

*Roger N. Stultz, Assistant Director*

Accounting Department

*John E. Spires, Director*

*Jordan R. Maple, Assistant Director*

Data Processing Department

*Ronald K. Smith, Director*

Editorial & Printing Services Department

*Chester E. Ball, Head*

Purchasing Department

*Raymond Warwick, Purchasing Agent*

*Mrs. Norma Steen, Assistant Purchasing Agent*

Security Officer

*Miles M. Dawson*

# THE OHIO STATE UNIVERSITY RESEARCH FOUNDATION

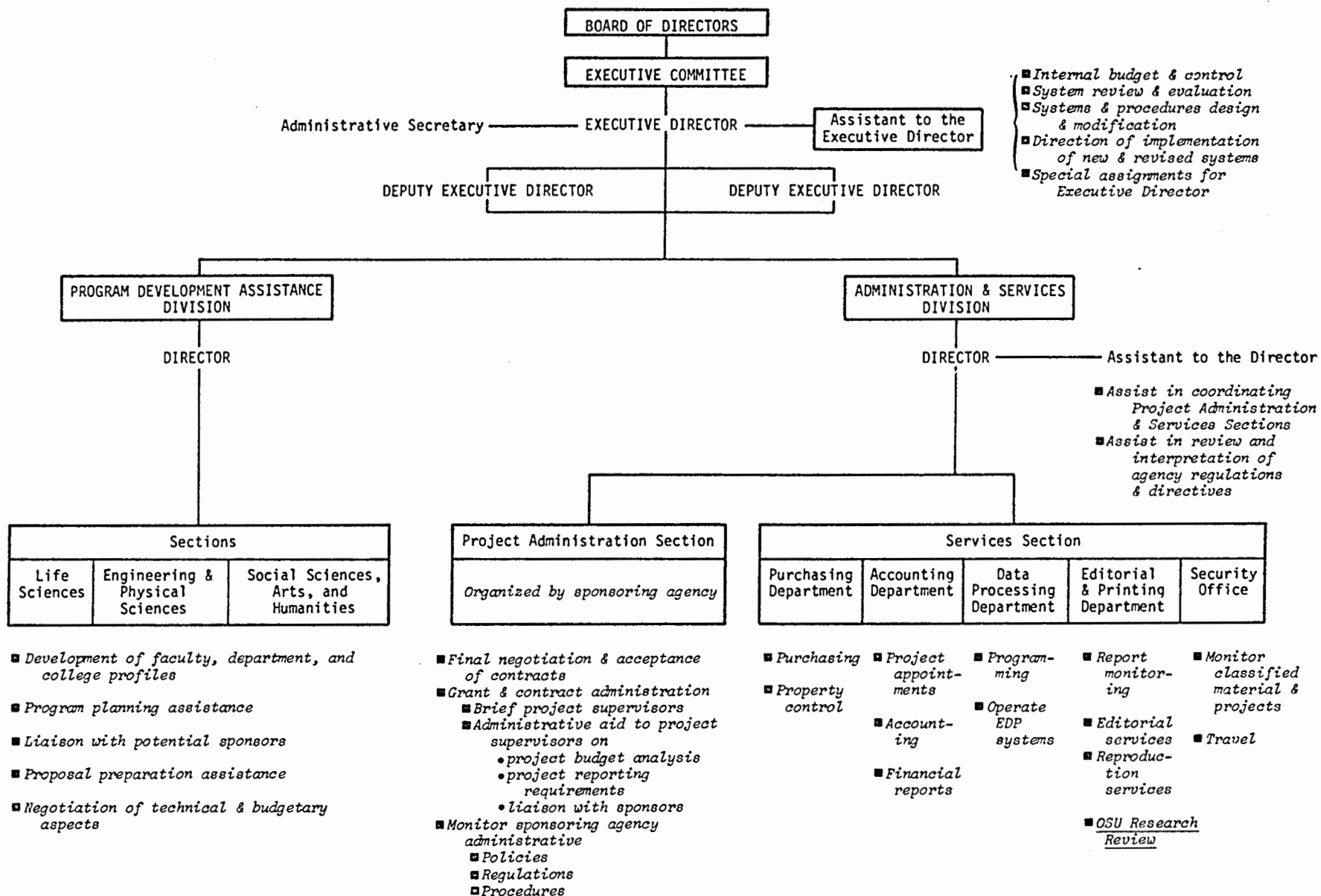


FIGURE 7 Chart showing the organizational structure adopted following reorganization by the Research Foundation in February, 1968 and outlining functions of the various operational units.

## ENTERING THE CENTENNIAL YEAR

As the University entered its Centennial Year the Foundation entered its 34th year in the service of the University and its faculty. It had evolved from an initial 14 industrial projects with \$26,000 in sponsor support in 1937 to a volume of sponsored research in excess of \$16-million and involving more than 700 active projects.

The Foundation developed improved administrative capabilities to handle the contractual and fiscal requirements of increased dollar volume and number of sponsored programs in the face of ever-more demanding Federal regulations and procedures. The increase in the number and the nature of sponsoring agencies and the growth of interdisciplinary mission-oriented research opportunities required also that OSURF develop new staff capabilities in the area of research planning and proposal preparation. The close of the decade of the Sixties found the Research Foundation re-orienting and building to provide the University with an integrated administrative organization for sponsored programs capable of providing program planning assistance to the faculty of the colleges within the newly reorganized structure of the University in their efforts to establish research and related activities consonant with the graduate orientation of the institution. The reorganization and building also served to strengthen fiscal and administrative capabilities required to buffer the University against undue pressures from sponsor policies and regulations.

With the advent of the Centennial Year, the Research Foundation was prepared to serve the University with new and more diversified effectiveness.

SELECTED LIST OF PUBLICATIONS  
BY THE OHIO STATE UNIVERSITY RESEARCH FOUNDATION  
DESCRIBING ITS ORGANIZATION AND ACTIVITIES

*Research & Invention*, monthly except July and August, from May, 1937, through December, 1939, Vol. I-III.

Four-page newsletter published by "The Toulmin Fund in cooperation with The Ohio State University Research Foundation." The publication was "provided by Colonel H. A. Toulmin, Jr., of Dayton, Ohio, to place before industrial executives of Ohio the news of invention and research that is of interest to commerce and industry."

*Men & Methods in Research*, paralleled publication of Research & Invention, from September, 1937, through December, 1939, for total of 20 issues.

Two-page newsletter "to present pertinent facts about faculty members whose interests and investigations have a practical application for industry."

*Science and Appliance*, monthly except July and August, from January, 1940, through June, 1964, Vol. IV-XXVIII.

Four-page "bulletin" to replace Research & Invention and Men & Methods in Research "to bring to the attention of our readers new developments that are important from the scientific, industrial, and educational points of view."

*OSU Research Review*, nine times yearly, with bi-monthly issues for May-June, July-August, and September-October, from Vol. I, No. 1, August, 1964, to present.

Successor to Science and Appliance; eight to twelve-page newsletter containing "feature articles about research projects and researchers, and other items to keep both University and off-campus readers informed about Ohio State research programs."

*Annual Report*, 17th (1953) through 32nd (1968); previous Annual Reports were typed or mimeographed (1937-1952).

Until 1964 the Annual Reports contained reviews of research, in addition to Administrative and Financial Data, and lists of Active Projects and Sponsors of Research. Since 1964 material concerning individual projects has been in pictures with captions.

*The Ohio State University Research Foundation*, 16-page brochure (circa 1961).

Illustrated brochure describing the Research Foundation organization, staff, resources, fields of research, procedures, etc.

*The Ohio State University Research Foundation*, eight-page brochure, March, 1968, with updating supplement March, 1969, published as section of Research Review.

Illustrated brochure showing organizational structures, historical background, mission, objectives, and growth of sponsored research in graphical form.

THE OHIO STATE UNIVERSITY RESEARCH FOUNDATION  
BOARD OF DIRECTORS  
1936 - 1955

OFFICERS

PRESIDENT

George W. Rightmire, 1937-1938

Julius F. Stone, 1938-1947, Chairman of the Board (Title voted 11-9-46)

Alpheus W. Smith, 1946-1955

VICE PRESIDENT

Thomas Midgley, Jr., 1941-1945 (deceased 11-2-44)

Alpheus W. Smith, 1944-1946

L. W. Chubb, 1946-1948

Joe W. Morrison, 1948-1953 (resigned 8-7-53)

Gordon B. Carson, 1953-1955

TREASURER

Carl E. Steeb, 1937-1945 (resigned 6-30-45)

Charles A. Kuntz, 1945-1946

Jacob B. Taylor, 1946-1955

SECRETARY

Hurlbut S. Jacoby, 11-36 - 1939 (deceased 11-16-38)

A. Ray Olpin, 2-39 - 1946 (resigned 12-31-45)

Acting Secretary

L. M. Grow, 1945-1946 (June 14)

SECRETARY

Carl E. Steeb, 6-46 - 1955

ASSISTANT SECRETARY

Thomas E. Davis, 1954-1955



RESEARCH DIRECTOR

Hurlbut S. Jacoby, Nov. 1936 - Nov. 1938

Acting Director

C. E. MacQuigg, Nov. 1938 - Feb. 1939

RESEARCH DIRECTOR

A. Ray Olpin, Feb. 1939 - 1942

EXECUTIVE DIRECTOR

A. Ray Olpin, 1942-1946 (resigned 12-31-45)

Acting Executive Director

Thomas E. Davis, 1945 - Feb. 1946

EXECUTIVE DIRECTOR

James S. Owens, Feb. 1946 - 1952 (resigned 12-31-51)

Acting Executive Director

Thomas E. Davis, Jan. 1952

EXECUTIVE DIRECTOR

Oram C. Woolpert, Feb. 1952 - 1955

EXECUTIVE DIRECTOR EMERITUS

A. Ray Olpin, 1945 (titled voted 11-3-45)

BOARD OF DIRECTORS

National Councilor Group

C. E. MacQuigg, 1937-1938 (resigned 7-27-37)

J. F. Stone, 1937-1947 (deceased 7-25-47)

Alpheus W. Smith, 1947-1956

T. F. Midgley, Jr., 1937-1945 (deceased 11-2-44)

Joe W. Morrison, 1945-1954 (resigned 8-7-53)

R. C. Newton, 1953-1954

National Councilor Group (cont)

C. F. Kettering, 1937-1943

L. W. Chubb, 1941-1949

E. C. Bain, 1949-1952

Francis C. Frary, 1952-1955

Alumni Group

A. C. Fieldner, 1937-1956

H. A. Toulmin, Jr., 1937-1948

T. A. Boyd, 1948-1954

J. L. Morrill, 1937-1943

H. R. Drackett, 1943-1949 (deceased 3-5-48)

E. C. Raney, 1948-1952

E. J. Crane, 1952-1955

Trustee Group

J. F. Stone, 1937-1940 (no longer a Trustee, 1937)

Lawrence Laybourne, 1937-1940 (no longer a Trustee, 1938)

C. S. Dargusch, 1938-1940; 1951-1954

C. F. Kettering, 1941-1956

H. A. Caton, 1937-1939

L. L. Rummell, 1939-1945

J. F. Lincoln, 1945-1951

G. W. Rightmire, 1937-1938 (resigned 7-38)

William McPherson, 1938-1940

Howard L. Bevis, 1940-1955

Industrial Councilor Group

C. F. Michael, 1937-1948 (deceased 11-4-38)  
C. R. Hook, 1938-1947 (resigned 11-3-45)  
Anson Hayes, 1945-1956  
E. E. Ware, 1937-1948  
F. W. Blair, 1948-1955  
J. F. Lincoln, 1937-1943; 1951-1955  
H. D. Bennett, 1943-1952 (resigned)

Research Group

W. W. Charters, 1937-1938  
G. F. Arps, 1938-1939 (1941?)  
Alpheus W. Smith, 1939-1947  
C. A. Doan, 1947-1956  
William McPherson, 1937-1939 (resigned 10-29-37)  
C. E. MacQuigg, 1937-1954 (deceased 4-52)  
L. D. Jones, 1952-1954 (resigned 9-1-53)  
Gordon B. Carson, 1953-1954  
J. F. Cunningham, 1937-1946  
N. Paul Hudson, 1946-1955

Alumni Members

D. J. Brumley, 1937-1939  
T. A. Boyd, 1939-1959  
William N. King, 1937-1949 (deceased 6-26-45)  
H. A. Toulmin, Jr., 1937-1949  
H. M. Kraner, 1949-1959  
F. H. Riddle, 1937-1961  
J. L. Morrill, 1937-1951 (resigned)

Alumni Members (cont)

Melvin DeGroot, 1951-1961

Harry R. Drackett, 1937-1953 (deceased 3-5-48)

E. C. Raney, 1948-1963

E. J. Crane, 1943-1963 (deceased 12-30-66)

A. C. Fieldner, 1937-1955

Roy D. McClure, 1937-1945

Howard E. Fritz, 1945-1955

Firman E. Bear, 1937-1947

George B. Thomas, 1947-1957

G. F. Schlesinger, 1937-1947 (deceased 12-39)

Harry M. Williams, 1940-1957

TRUSTEE MEMBERS  
(ex officio)

George W. Rightmire, 1937-1938

William McPherson, 1938-1940

Howard L. Bevis, 1940-1954

Herbert S. Atkinson, 1937-1948

John W. Bricker, 1948-1954

Newton D. Baker, 1937- Nov. 1937

Lockwood Thompson, 1938-1951

M. Edith Campbell, 1937-1941

Harry A. Caton, 1937-1939

L. L. Rummell, 1939-1946

Robert N. Gorman, 1951-1954

L. E. Laybourne, 1937-1939

Carlton S. Dargusch, 1938-1954

Trustee Members (cont)

Charles F. Kettering, 1941-1954  
Burrell Russell, 1937-1942  
Warner Pomerene, 1943-1950  
Robert F. Black, 1951-1954  
Julius F. Stone, 1937  
Clinton J. Altmaier, 1937-1944  
Donald C. Power, 1944-1951  
James W. Huffman, 1951-1954  
James F. Lincoln, 1943-1949  
Forrest G. Ketner, 1949-1954  
Bland L. Stradley, 1945-1954  
Harvey H. Davis, 1945-1948  
Harlan H. Hatcher, 1948-1951  
Frederic W. Heimberger, 1951-1954  
Jacob B. Taylor, 1948-1954

NATIONAL COUNCILORS

Thomas Midgley, Jr., 1937-1951 (deceased 11-2-44)  
Leason H. Adams, 1946-1961  
L. Warrington Chubb, 1937-1961 (deceased 4-52)  
Francis C. Frary, 1952-1961  
Saul Dushman, 1937-1953 (resigned 10-12-53)  
Robert B. Sosman, 1937-1943  
Edgar C. Bain, 1953-1963  
Harvey Fletcher, 1937-1955 (resigned 1-10-53)  
Robert D. Coghill, 1953-1955  
Clarence F. Hirshfeld, 1937-1945 (deceased 1939)

National Councilors (cont)

E. G. Bailey, 1939-1955

Henry G. Knight, 1937-1947 (deceased 7-13-42)

Ross G. Harrison, 1943-1947

Roy C. Newton, 1947-1957

C. F. Kettering, 1937-1947

Joe W. Morrison, 1944-1957 (resigned 8-7-53)

William P. Yant, 1953-1957

Charles E. MacQuigg, 1937-1939 (resigned 7-27-37)

Julius F. Stone, 1937-1949 (deceased 7-25-47)

A. W. Smith, 1947-1959

Willard Chevalier, 1937-1949

Robert A. Kehoe, 1949-1959

INDUSTRIAL COUNCILORS

Charles R. Hook, 1937-1949 (resigned 11-2-45)

Anson Hayes, 1945-1959

Charles F. Michael, 1937-1939 (deceased 7-38)

J. C. Argetsinger, 1938-1949 (resigned 7-14-47)

James Prendergast, 1947-1959

Renton K. Brodie, 1937-1951 (resigned 10-26-43)

Frederick C. Crawford, 1944-1951

C. J. Rodman, 1951-1961

Harvey S. Firestone, Jr., 1937-1961

William V. Fisher, 1937-1943

Charles J. Kurtz, Sr., 1945-1963

E. E. Ware, 1937-1943

J. F. Lincoln, 1949-1963

Industrial Councilors (cont)

Wallace T. Holliday, 1937-1945

Francis W. Blair, 1945-1955

Alexander Thomson, 1937-1945 (deceased 8-39)

Hubert D. Bennett, 1940-1955 (deceased 1951)

R. P. Dinsmore, 1951-1955

W. J. Harshaw, 1937-1947

Games Slayter, 1947-1957

James F. Lincoln, 1937-1943

E. A. Deeds, 1943-1947

Earle C. Smith, 1947-1957

RESEARCH MEMBERS

Dean, College of Agriculture

J. F. Cunningham, 1937-1947 (retired 9-1-47)

L. L. Rummell, 1947-1954

Director, Agricultural Experiment Station

Edmund Secrest, 1937-1947

L. L. Rummell, 1947-1954

Dean, College of Arts and Sciences

W. H. Siebert, 1937

B. L. Stradley, 1937-1944

Harlan Hatcher, 1944-1948

Acting Dean

Frederic W. Heimberger, 1948-1949

Dean

Frederic W. Heimberger, 1949-1951

Acting Dean

J. Osborn Fuller, 1951

Dean

James F. Fullington, 1952-1954

Director, Bureau of Business Research

Acting Director

Viva Boothe, 1937-1941

Director

Viva Boothe, 1941-1954

Dean, College of Commerce and Administration

W. C. Weidler, 1937-1954

Dean, College of Dentistry

H. M. Semans, 1937-1938



Acting Dean

Wendell Postle, 1938

Dean

Wendell Postle, 1939-1954

Dean, College of Education

George F. Arps, 1937

Arthur J. Klein, 1937-1945 (resigned 8-31-45)

Acting Dean

Ross L. Mooney, 1945-1946

Dean

Donald P. Cottrell, 1946-1952

Acting Dean

Harold P. Fawcett, 1952

Dean

Donald P. Cottrell, 1953-1954

Director, Bureau of Educational Research

W. W. Charters, 1937-1942 (resigned 9-42)

T. C. Holy, 1942-1951

Acting Director

W. R. Flesher, 1951

Director

Arthur W. Foshay, 1952-1954

Dean, College of Engineering

Acting

W. D. Turnbull, 1937

Dean

C. E. MacQuigg, 1937-1952

Acting Dean

Lawrence D. Jones, 1952-1953

Dean

Gordon B. Carson, 1953-1954

Assistant Director, Engineering Experiment Station

J. R. Shank, 1937-1954

Executive Director, Engineering Experiment Station

Robert S. Green, 1954-1954

Director, Franz Theodore Stone Laboratory

Dwight M. DeLong, 1936-1937

Thomas H. Langlois, 1938-1954

Dean, Graduate School

William McPherson, 1937 (resigned 10-29-37)

George F. Arps, 1937-1939

Alpheus W. Smith, 1939-1946

N. Paul Hudson, 1946-1954

Dean, College of Law

H. W. Arant, 1937-1939

Arthur T. Martin, 1939-1945 (deceased 1945)

Acting Dean

Harry W. Vanneman, 1946-1947

Dean

Jefferson B. Fordham, 1947-1952

Acting Dean

Frank R. Strong, 1952

Dean

Frank R. Strong, 1952-1954

Dean, College of Medicine

J. H. J. Upham, 1937-1941

Hardie Kemp, 1941-1942

Acting Dean

L. L. Bigelow, 1942

Rollo C. Baker, 1943-1944

Dean

Charles A. Doan, 1944-1954

Dean, College of Pharmacy

Clair A. Dye, 1937-1939

B. V. Christensen, 1939-1954

Dean, College of Veterinary Medicine

O. V. Brumley, 1936-1945 (deceased 1-13-45)

Acting Dean

Walter R. Hobbs, 1945-1946

Dean

Walter R. Krill, 1946-1954

THE OHIO STATE UNIVERSITY RESEARCH FOUNDATION  
BOARD OF DIRECTORS

Reorganization 1954

OFFICERS

PRESIDENT

Alpheus W. Smith, 1954-1957

Frederic W. Heimberger, 1957-1963 (resigned 10-15-62)

Gordon B. Carson, Acting President, effective 10-15-62

Alfred B. Garrett, 1962-

VICE PRESIDENT

Gordon B. Carson, 1954-

TREASURER

Jacob B. Taylor, 1954-1957

Charley F. Miller, 1957-1966

Ernest W. Leggett, 1966-

SECRETARY

Carl E. Steeb, 1954-1958 (deceased 5-3-58)

John T. Mount, 1958-1969

Edward W. Moulton, 1969-

ASSISTANT SECRETARY

Thomas E. Davis, 1954-1966

Raymond S. Bugno, 1966-

EXECUTIVE DIRECTOR

Oram C. Woolpert, 1952-1963

Robert C. Stephenson, 1963-

ASSOCIATE EXECUTIVE DIRECTOR

Thomas E. Davis, 1960- 1/31/67

TRUSTEE MEMBER-DIRECTOR

General Carlton S. Dargusch, 1955 - Jan. 12, 1962

Thomas F. Patton, 1962-1964

Stanley C. Allyn, Sept. 7, 1962-1967

John G. Ketterer, 1967 -

ADMINISTRATION MEMBERS-DIRECTORS

Howard L. Bevis, 1955-1956

Novice G. Fawcett, 1956-

Frederic W. Heimberger, 1955-1964

John C. Weaver, 1964-1966

Alfred B. Garrett, Nov. 1, 1962-

N. Paul Hudson, 1955-1956

Everett Walters, Acting Dean, Jan. 9, 1956  
Dean, May 14, 1957

Richard Armitage, Acting Dean, July 1, 1962  
Dean, Sept. 1, 1963

Bland L. Stradley, 1955-1957 (deceased 8-4-57)

John T. Mount, 1960- 1969

Edward Q. Moulton, 1969-

Jacob B. Taylor, 1955-1957

Gordon B. Carson, 1958-

John E. Corbally, Jr., 1964-1969

James A. Robinson, 1969-

FACULTY MEMBERS-DIRECTORS

Cecil E. Boord, 1955-1958

C. C. Allison, 1958-1961

Egon G. Guba, 1961-1964

Faculty Members-Directors, (cont.)

Hershel J. Hausman, 1964-1967

Ira A. Gould, 1967-

William Charvat, 1955-1959

Claude M. Simpson, Jr., 1959-1962

Delos D. Wickens, 1962-1965

Melvin Newman, 1965-1968

Erwin E. Dreese, 1955-1963

E. Milton Boone, 1963-1966

Curt A. Levis, 1966-1969

Carroll L. Shartle, 1955-1956

R. George Jaap, 1962-1965

Rudolph Edse, 1965-1968

Grant L. Stahly, 1955-1957

Fred A. Hitchcock, 1957-1960

Jorgen M. Birkeland, 1960-1966

Walter R. Harvey, 1966-1969

T. Scott Sutton, 1955-1958

Dudley Williams, 1958-1961

David White, 1961-1964

Walter C. Reckless, 1964-1967

Aldrich Syverson, 1967-1970

John D. Lee, 1968-1971

Arliss L. Roaden, 1968-1971

Henry L. Hunker, 1969-1972

Herbert S. Parnes, 1969-1972

ALUMNI MEMBERS-DIRECTORS

Thomas A. Boyd, 1955-1963  
Donald J. McPherson, 1963-1966  
E. J. Crane, 1955-1961  
Melvin De Groote, 1961-1964 (deceased 2-3-63)  
George G. Landis, 1963-1970  
Arno C. Fieldner, 1955-1959  
Earle C. Smith, 1959-1962 (deceased 5-21-60)  
G. E. Tenney, 1960-1968  
Tahlman Krumm, 1968-1971 (deceased 8-16-69)

NATIONAL COUNCILOR MEMBERS-DIRECTORS

Joseph W. Barker, 1955-1962  
William L. Everitt, 1962-1965  
John A. Prior, 1965-1971  
Francis W. Blair, 1955-1957  
William H. Charch, 1957-1960 (deceased 7-13-58)  
G. Preston Hoff, 1959-1963  
Clyde A. Hutchison, Jr., 1963-1969  
Robert D. Coghill, 1955-1958 (resigned 3-18-57)  
Roland M. Bethke, 1957-1970  
Robert S. Green, 1968-1971  
Francis C. Frary, 1955-1964  
Harry B. Warner, 1964-1970  
George R. Gehrkins, 1955-1966  
Joseph J. Spengler, 1955-1956

National Councilor Members Directors, (cont)

Ralph J. Watkins, 1956-1959 (resigned 8-2-57)

Alpheus W. Smith, 1957-1965 (resigned 7-1-63)

Robert S. Green, 1963-1965; 1968-1971

Robert J. Tait, 1965-1968

David Cummins, 1969-1972

William Sewell, 1969-1972